SURFACE WATERS OF KENTUCKY

WARREN RAYMOND KING

The

Kentucky Geological Survey

WILLARD ROUSE JILLSON
DIRECTOR AND STATE GEOLOGIST

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Surface Waters of Kentucky

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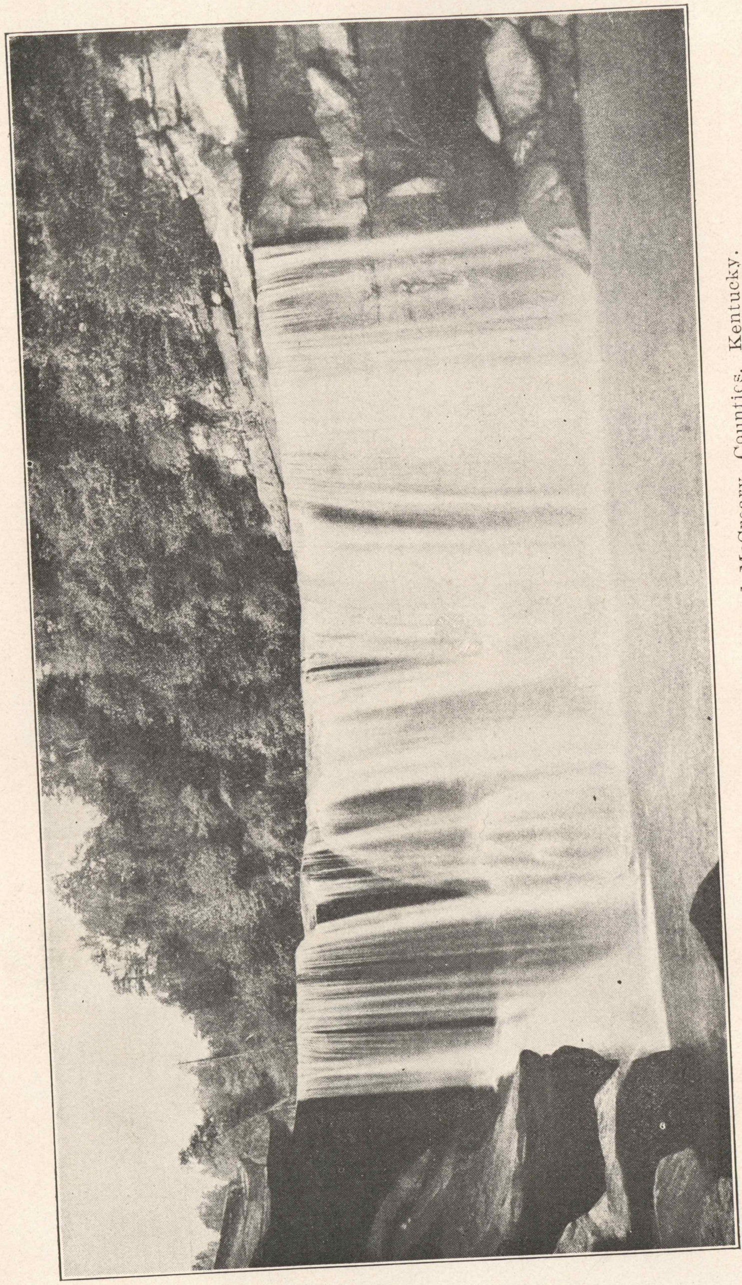

Cumberland River Falls, Whitley and McCreary Counties, Kentucky.

THE SURFACE WATERS OF KENTUCKY

A Preliminary Report descriptive of the Stream Flow and Power Resources of the Ohio, Big Sandy, Kentucky, Green and Cumberland Rivers in Kentucky.

BY

WARREN RAYMOND KING

HYDRAULIC ENGINEER

Prepared in cooperation with
The United States Geological Survey

Illustrated with Twenty Photographs, Maps and Diagrams

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Letter of Transmission

Chattanooga, Tenn., February 17, 1924.

DR. W. R. JILLSON,
Director and State Geologist,
Frankfort, Ky.

Dear Sir:

There is transmitted herewith my report upon the Surface Waters of Kentucky, which has been prepared in connection with a cooperative agreement between the United States Geological Survey and the Kentucky Geological Survey.

In addition to the summaries of stream flow data which have been collected under successive cooperative agreements I have included in this report a certain amount of text matter for the purpose of informing the general public, concerning the nature of the work which we are doing, the purpose for which it is done and the benefits to be derived from such investigations. Special emphasis has been placed upon the subject of water power, and upon the importance of collecting dependable records of stream flow which are so essential to any well planned development for power, navigation, water supply or drainage.

This report has been reviewed by the Section of Reports of the U. S. Geological Survey in Washington who made many helpful suggestions and has been approved by the Chief Hydraulic Engineer.

Respectfully,

WARREN R. KING,

District Engineer,
U. S. Geological Survey

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Preface

This report on the Surface Waters of Kentucky should properly be regarded as a preliminary one due to the lack of an abundance of long term and widely distributed records of stream flow in Kentucky. It is issued in response to a growing demand for full and accurate information concerning the surface water resources of Kentucky. The plan of the work has been so arranged as to bring together into a single publication for the convenience of those who may be interested all available data on the surface waters of the State. Funds have not been available for any great amount of field work or for much original investigation, and under these circumstances the author was limited to the study and compilation of existing information.

In preparing this report free use has been made of the publications of the U. S. War Department, the U. S. Weather Bureau, the U. S. Bureau of Census, as well as those of the U. S. Geological Survey. Due acknowledgment is here made to these several Federal Departments for reliable information thus secured. It is felt that the surface water statistics herein presented if properly interpreted and used will result in a better understanding of the value of the latent hydroelectric power resources of Kentucky, and assist materially in their development.

W. R. Jillson

Director and State Geologist,
Kentucky Geological Survey.

Old State Capitol
Frankfort, Kentucky.
March 1, 1924.

Surface Waters
of Kentucky

CHAPTER I.

GENERAL INTRODUCTION

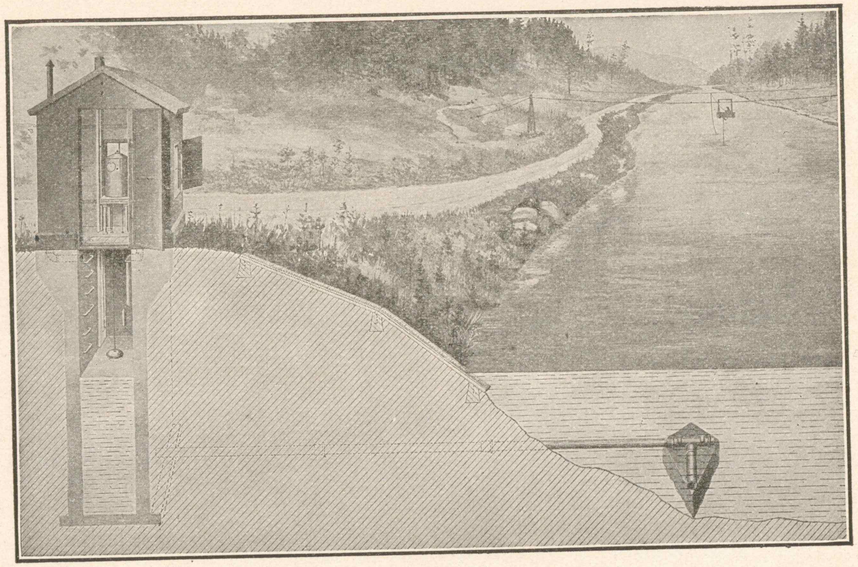
Water resources and their utilization are of great economic value to the people of Kentucky yet there is probably no subject of general interest on which so little data are available. Little attention has been paid to the rivers and streams of Kentucky, officially or otherwise, except in the development of inland navigation; and much of the money and energy expended for that purpose have been misdirected or wasted through lack of knowledge concerning the quantity of water available. This apparent lack of interest may be attributed to several causes: (1) The navigation works have not brought the prosperity to the adjacent country that was anticipated; (2) the State possesses vast natural resources in coal, timber, and oil which are regarded by many as an inexhaustible source of fuel and power; (3) each city has had to solve the problem of its municipal water supply, and water has usually been obtained in sufficient quantities nearby; (4) flood damage is confined largely to points along Ohio river, the control and regulation of which lies outside the jurisdiction of the State; (5) drainage of swamp lands has been left largely to private enterprises.

The utilization of the streams of Kentucky may be briefly summed up under the following heads, all of which have a direct bearing upon the public welfare and economic life of the State: Domestic and public water supplies, industrial uses, navigation, flood control, water power, and drainage. These will be discussed briefly in the order named.

Public Water Supplies

Domestic and public water supplies are obtained from cisterns, springs, wells, lakes, and streams; the quality, adequacy, and availability of the supply being the determining factors. For the most part, individual farms and small isolated settlements obtain their water either from open wells or springs. Cisterns are used at many places where underground water can not be

obtained within reasonable depth or is of poor quality. Oftimes a stream or small reservoir furnishes water for stock, while the cistern, which contains collected rain water, furnishes the water for household uses. Those sources of supply are inadequate for towns and cities, and pumping plants have to be installed to raise the ground water or to utilize the streams. At the present time there are only a few cities or towns in the State that have a



A Typical Gaging Station.

population of 1,000 or more which do not use surface water as the source of supply. At many places where small streams are used to supply comparatively large towns, the demand during periods of low water exceeds the supply and storage reservoirs have been constructed to insure against a possible shortage of water. The following table has been compiled to show the source and the nature of the water supply for 53 cities and towns in Kentucky that have a population of more than 1,000:

Source and nature of water supply of 53 cities and towns in Kentucky.

CITY OR TOWN	Population in 1920	Ownership of Water Works	Percentage of People Served	Source of Supply	Method of Distribution	Capacity of Standpipes or Reservoirs	Daily Capacity of Pumps	Daily Average Consumption	Daily Consumption Per Capita
						Thousands of Gals.			Gals.
Ashland	14,729	Municipal	94	Ohio River	Reservoirs	1,500	2,500	1,300	94
Augusta	1,820	No water works							
Barbourville	1,877	Private	60	Wells	Reservoirs	500	300	125	115
Bardwell	1,120	Municipal	77	Wells	Standpipes	26	60	30	35
Berea	1,640	Private	100	Lake	Reservoirs	400	700	150	92
Bowling Green	9,638	Municipal	100	Big Barren River	Reservoirs	2,000	5,000	1,000	104
Burnside	1,078	Private	90	So. Fk. Cumberland	Reservoirs	275	360	50	52
Catlettsburg	7,455	Private	185	Big Sandy River	Reservoirs	5,000	8,000	1,000	72
Clay	1,378	No water works							
Campbellsville	1,535	Private	50	Pitman Creek	Standpipes	103	1,008	75	98
Carlisle	1,569	Municipal	100	Lake	Standpipes	67	662	45	179
Carrollton	2,281	Municipal	50	Wells	Reservoirs	20	200	180	158
Clinton	1,455	Private	100	Wells	Standpipes	40	4,000	80	55
Columbia	1,076	No water works							
Covington	57,121	Municipal	100	Ohio River	Reservoirs	111,000	8,000	4,500	79
Cynthiana	3,857	Municipal	80	So. Fk. Licking R.	Standpipes	300	1,000	500	162
Danville	5,099	Municipal	70	Dix River	Standpipes	225	4,000	960	270
Dawson Springs	1,762	Private	11	Wells	Reservoirs	250	100	100	516
Dayton	7,646	Private	100	Ohio River	Reservoirs				
Earlington	3,652	Private	100	Two lakes	Standpipes	160	1,080	300	82
Flemingsburg	1,562	No water works							
Frankfort	9,805	Private	100	Kentucky River	Reservoirs	6,000	9,000	2,000	204
Franklin	3,154	Municipal	75	Drakes Creek	Standpipes	60	1,150	450	169
Glasgow	2,559	Private	60	So. Fk. Beaver Creek	Standpipes	800	800	300	195
Georgetown	3,903	Private	100	Springs	Direct pressure		2,890	600	154
Greenville	1,917	Private	80	Lake	Reservoirs		500	75	49
Henderson	12,169	Municipal	100	Ohio River	Reservoirs & standpipe	3,868	12,000	2,500	205

Source and nature of water supply of 53 cities and towns in Kentucky—Continued.

CITY OR TOWN	Population in 1920	Ownership of Water Works	Percentage of People Served	Source of Supply	Method of Distribution	Capacity of Standpipes or Reservoirs (Thousands of Gals.)	Daily Capacity of Pumps (Thousands of Gals.)	Daily Average Consumption (Thousands of Gals.)	Daily Consumption Per Capita (Gals.)
Hickman	2,633	Private	80	Wells	Standpipes	45	450	300	143
Hopkinsville	9,696	Private	80	Little River	Standpipes	150	2,000	500	65
Jackson	1,503	No water works							
Lawrenceburg	1,811	Municipal	75	Salt River	Standpipes	65	410	150	110
Lebanon	3,239	Municipal	100	Rolling River	Reservoirs	2,588	1,000	493	152
Leitchfield	1,077	Private		Wells	Standpipes	5	65		
Lexington	41,534	Private	95	Impounding reservoirs	Direct pressure		15,000	4,000	101
Louisa	2,011	Private	95	Levisa Fork River	Reservoirs	1,000	1,000	300	157
Louisville	234,891	Municipal	100	Ohio River	Reservoirs	187,000	212,000	32,111	136
Mayfield	6,583	Municipal	100	Wells	Reservoirs	254	2,500	600	90
Maysville	6,107	Private	90	Ohio River	Reservoirs	2,750	3,000	1,000	182
Middlesborough	8,041	Private	87	Little Yellow Creek	Standpipes	1,350	4,596	720	103
Monticello	1,514	No water works							
Mortons Gap	1,061	No water works							
Mount Sterling	3,995	Private	65	Slate River	Stand pipes	260	576	200	77
Newport	29,317	Private	100	Ohio River	Reservoirs				
Owensboro	17,424	Municipal	100	Wells	Direct pressure		5,000	3,500	200
Paducah	24,735	Private	100	Ohio River	Standpipes	500	33,000	5,000	202
Paris	6,310	Private	70	Stoner River	Standpipes	296	2,500	750	158
Pikeville	2,110	Private	100	Big Sandy River	Direct pressure		1,000	400	189
Providence	4,151	Private	30	Tradewater River	Standpipes	100	1,000	225	181
Richmond	5,622	Private	100	Otter Creek	Standpipes	135	3,000	900	160
Russell	1,756	Municipal	63	Wells	Direct pressure				
Russellville	3,124	Municipal	64	Wells	Reservoirs	165	150	100	50
Somerset	4,672	Private	100	Pitman Creek	Reservoirs	1,000	1,000	400	86
Sturgis	1,750	Private	16	Tradewater River	Standpipes	200	250	15	54

The subject of water supply, particularly for large communities, deserves the most careful consideration and the highest technical skill. The watershed from which the supply is to be obtained should be examined and steps shall be taken to correct any evils or sources of pollution that may exist. Careful analyses of the water should be made at all seasons of the year to ascertain the quality of the water under varying conditions of temperature and seasonal flow. These analyses should be made whether the supply is from ground water or surface water, as surface impurities may find their way into the underground passages and contaminate the source of supply. In general, unless the drainage area is known to be free from disease-breeding elements and is carefully guarded, all public water supplies should be filtered and chemically treated in such a way as to remove the causes of water-borne diseases. Bacteriological analyses should be made frequently. Though underground water is generally clearer than surface water, owing to natural filtration in the strata through which it passes, it is usually harder and carries in solution a greater amount of mineral impurities. Many of these impurities, however, may be precipitated through chemical treatment.

INDUSTRIAL WATER SUPPLIES

Throughout the State large quantities of water are required for industrial plants and it is essential in the location of such plants that adequate water of a suitable quality should be available. Many industrial plants located in cities use water from city mains; others have developed their own water supply. Different classes of industries have different requirements as regards quality of water, though it is generally desired that the water be soft and contain few mineral impurities. Some industries, such as ice making, use the water as an essential ingredient of the product, others use it only in the generation of steam and for condensing purposes. The water used in boilers should be as free from scale-forming substances as possible. The most objectionable of these substances are calcium and magnesium sulphates, which, upon evaporation of the water, form a hard refactory crust on the sides of the boiler or in the boiler tubes. This crust, which is very difficult to remove, is a poor conductor of heat and, as a result of its accumulation, the ef-

ficiency of the boiler is greatly reduced. It has been estimated that a scale half an inch thick will reduce the boiler efficiency 50 per cent. In addition to the loss of efficiency, the boiler itself soon deteriorates owing to the action of these impurities and to the additional heat to which it must be subjected in order to produce the required amount of steam. There are many kinds of patent water softeners and purifiers on the market, some of which accomplish the desired result though others are actually injurious. In the selection of a water softening compound its composition should be carefully determined as well as its probable effect upon the water to be treated. Condenser water is likewise essential to the modern steam plant; and though the quality of condenser water is not so important a matter as is the quality of the boiler water, a much greater quantity is needed. This quantity, however, can be reduced somewhat by the use of cooling devices that enable the water to be used over and over again. Roughly speaking, the modern steam power plant requires about one second-foot of water for every 250-horse power of capacity, an important consideration in the matter of location of industrial power plants.

Navigation

The improvement of rivers for navigation is an old practice in Kentucky. For more than a century works of one kind or another for the promotion of river transportation have been constructed. Some of these early works are still in service, but others have been superseded by more modern equipment. The earliest works were constructed by private interests for use in transporting lumber and coal from distant points. These, for the most part, were crude and of a temporary nature and soon came into disuse through lack of maintenance. The State later undertook to make several of the streams navigable by the construction of locks and dams, and several extensive systems were begun. Some of the dams were completed, but on account of the great cost the State was forced to abandon the original projects and a large part of the money expended for this construction was a total loss. As railroads were built in the river valleys, river navigation gradually diminished. River traffic became more and more unprofitable until in some localities, where a

slack-water system had been completed, practically no use was made of the facilities afforded. In 1879 the Federal Government assumed control of the navigable waters of the State and since that date the previously-constructed navigation works have been operated and maintained by the United States Engineers Corps. Many additions and new improvements have been made by the Federal Government since it assumed control. At the present time there are 28 locks and dams in operation on rivers in the State, aside from those on Ohio River. These are distributed as follows: Big Sandy, 3; Levisa Fork, 1; Tug Fork, 1; Kentucky River 14; Green River, 6; Barren River, 1; Rough River, 1; and Cumberland River, 1. The average lift of locks on the Big Sandy and its tributaries is about 12 feet, on Kentucky River about 16 feet, and on Green River and its tributaries about 14½ feet. The total length of slack water provided by these improvements is 575 miles, distributed as follows: Big Sandy, 27; Levisa Fork, 18; Tug River, 12; Kentucky River 260; Green River, 187½; Barren River, 21; Rough River, 29½ and Cumberland River, 20 miles.

Increased freight rates on railroads during the past few years have had a tendency to increase the traffic on rivers, and this increase will probably become more apparent in the future, provided terminals are constructed to facilitate the handling of river freight.

Flood Control

The principal flood damage in the State is at points along Ohio River. The larger cities of the State, aside from those along Ohio River, are situated on high ground rather than in the river valleys, hence flood-control measures for the interior have not occupied a prominent place in the State affairs. The control or regulation of Ohio River is a problem of such magnitude that it can not be undertaken by a single State. Until the combined effort of a group of States is centered upon this proposition or until the Federal Government takes hold of the situation local protection in the way of dikes and levees is about all that can be accomplished, and Ohio River will continue to take a huge toll in life and property. At some future time, this problem will doubtless be considered as a whole and a solution reached. Just what will be the solution is difficult to foresee, but storage or de-

tention reservoirs will probably take an important part. Some years ago the city of Pittsburg made a detail study of floods there and their possible remedy. The matter of constructing storage reservoirs on the headwater streams was considered carefully, and it was found that it was not practicable for the city to undertake such a project because of the immense cost. The land that would have been submerged by the construction of storage reservoirs is very valuable, and numerous railroads and industrial plants of various kinds would have had to be purchased or moved to other locations. It was finally decided to adopt local protection by means of channel improvement by construction of levees, and by filling in much of the low ground to a point above maximum flood level. It would seem, however, that if all States bordering on the Ohio River were to pool their efforts and money much of the destructive flood damage could be eliminated through the construction of detention reservoirs or storage on the main tributaries of the Ohio. These reservoirs might well serve the dual purpose of reducing flood crests and equalizing stream flow, thus aiding navigation and development of water-power.

The Miami Conservancy District has practically completed the flood prevention project on Miami River in Ohio. This project included five large retarding basins which permit only that amount of water to pass in a given time that the channel is capable of carrying. In addition to the creation of these retarding basins numerous improvements of the channel were made in order to remove obstacles and to increase the discharge capacity.

In the two projects mentioned above, the high cost of land rendered the building of large storage reservoirs of the ordinary type impracticable. This, however, would not be true on a number of other large tributaries, particularly in the mountainous or rugged areas of West Virginia and Kentucky. It is not improbable that at some future date a combination of reservoirs of various kinds will be constructed to reduce flood damage from the Ohio.

Water Power

The power possibilities of any stream depend upon the quantity of water flowing in the stream and the concentrated fall or head which may be developed.

The use of flowing water for developing power is by no

means a new conception. It was practiced in remote antiquity and has continued up to the present time; though there have been many modifications in the application of water power the principle is the same to-day as when first conceived. It is simply converting into useful work the potential energy of a column of water as it falls from one level to another. Until about 50 years ago the use of water power was confined to the point where it was generated, and it remained for the electrical engineer to devise ways and means of transporting the energy to meet the power demands of larger industrial centers, which were remote from the source of supply. This has been achieved through the electrical method of generation and the perfecting of high voltage transmission, and there are now transmission systems throughout the country using voltages from 100,000 to 220,000 by which energy is carried 100 miles or more. Electric power is nominally the product of the voltage by the amperage, hence by increasing the voltage, the amperage, for the same amount of power, is decreased. The heat losses are determined by the current or amperage and the resistance of the circuit, hence if the current is decreased sufficiently there will be but little loss from heating and a comparatively small wire may be used for carrying a large quantity of power at high voltage and low amperage. It is no longer necessary to move the factory to an isolated site, in order to use water power or to erect a steam power plant at the factory; the power can be transmitted over high-tension wires to any point within reasonable distance with but comparatively small loss, and there it can be used to turn the wheels of industry and propel street cars, or can be distributed for lighting and domestic purposes. This has placed the development of water power on a new and advanced plane by affording a market a long distance from power sites.

In recent years there has been a growing tendency to interconnect as many plants as possible in a given area to form one large central system. By so doing, a greater diversity both in sources of power and in power consumption is obtained. This is beneficial not only to the power companies as a result of a higher load factor for the system but to the consumer who is

thereby assured of uninterrupted and better-regulated power at a cheaper rate than is possible if each plant is operated alone.

The water power bill recently passed by Congress has given new impetus to the development of water power by opening a way whereby the investor has an opportunity to make a fair return, and at the same time the interests of the people are amply safeguarded. Heretofore the investor in water-power projects was so hampered by inadequate and adverse legislation that development along that line had almost ceased. Since the Federal Power Commission came into existence applications for permits to develop power have been filed amounting to more than twice the total hydro-electric horsepower now developed in the United States. A large percentage of the applicants will probably not carry out their plans for early development, but, after making due allowance for such, it still is evident that an era of extensive development is beginning.

Power is the basis of all industry; without it there could be no mills or factories, no railroads or steamships. In fact the tilling of the soil is dependent on power whether it be man power, horsepower, or tractor machines. This is an age of industrial achievement and the demands for power, in order to keep pace with this development, are growing so rapidly that eventually all known sources will need to be pressed into service. Statistics show that in the State of New York the connected load of industrial plants has increased more than 100 per cent in the last six years. The same is true of many other States, and all States have shown a marked increase along this line.

Up to the present time the great bulk of the country's power has been produced from coal from which, under the most favorable conditions, it is possible to recover for power purposes only about 20 per cent of the energy which it contains. On the other hand, it is possible to recover 90 per cent of the energy from falling water. Those who have investigated the extent of our natural resources realize that the supply of coal and oil is not inexhaustible. The rapid depletion of the supply of coal is strikingly illustrated by the fact that 800,000,000 tons of coal were mined in the United States in 1920. The demand upon the oil supply is also heavy. It is therefore essential to conserve the supply of both coal and oil by the development of water power wherever such development is economically possible.

In a recent address before the Advisory Council of the Federated Engineers Development Corporation Dr. Charles P. Steinmetz, one of the world's best authorities on the subject of electric power, has this to say with respect to the power situation in the State of New York: "If we in New York State would develop all our available water power, by the present established methods, we could shut down every steam engine and steam locomotive and run our industries and railroads by hydro-electric power, using coal for domestic heating only. Such water power development would reduce our coal consumption to about 10,000,000 tons, less than one-fifth of what we use now." "Our experience with coal strikes and railroad strikes this year, has made it clear that a change must be made and it will probably be drummed in more forcibly still during the coming winter, that it is not safe for the Empire State to rely upon coal. There is one way out—it is to make ourselves independent as far as the coal industry is concerned by developing our water power."

It is not possible to supplant all or perhaps even a large part of the existing steam power plants in Kentucky by water power, but it is possible and desirable to satisfy a large part of the increased demand for the next few years in this way and thus conserve coal and afford relief to the transportation systems of the country which during normal times are heavily overburdened.

The country will doubtless be dependent upon coal for domestic heating purposes for generations to come. Furthermore, the use of coal for its by-products is an industry which is developing rapidly and will in the future take a large part of the coal output. It will therefore be seen that there is ample field of use for all sources of energy that can be developed economically and the need for developing all of these sources to the point of maximum efficiency is a fast-growing one.

Statistics compiled by the United States Geological Survey show that an average of about 40,000 tons of coal a month is consumed in Kentucky by public-utility plants that have a capacity of more than 100 kilowatts, the power output from which averages about 22,500,000 kilowatt-hours a month or about 3½ pounds of coal per kilowatt-hour of electrical energy. This in-

dicates that the present average demand for energy would require about 100,000 horsepower in electrical machinery, assuming a load factor of about 40 per cent. The actual installed capacity in steam-generating units is about 150,000 horsepower. It is estimated that without the use of storage the rivers of the State are capable of producing 100,000 horsepower under minimum flow conditions and that supplemented by adequate storage or auxiliary steam plants this figure might be increased to about 300,000 horsepower. There are at present no large hydro-electric power plants in Kentucky. It is seen, therefore, that available primary water power exceeds the combined installed capacity of the public-utility power plants in the State.

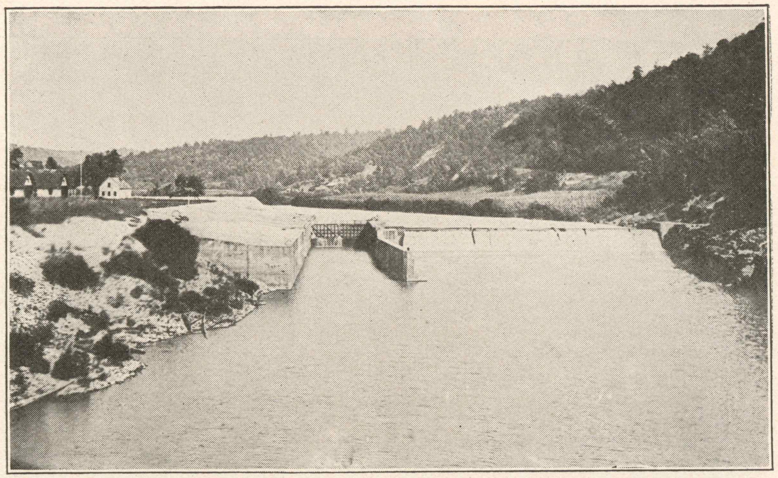
Interconnection of power systems has been developed to a high point in various parts of the country and has resulted in increased efficiency and in lower cost of generating power. This trend toward consolidation of power interests will doubtless continue and it is conceivable that the Central States will some day be enveloped by one large power system by which both water power and steam power will be distributed to all important centers. The Keokuk development on the Mississippi, the Muscle Shoals development on the Tennessee, and the Ohio River Falls at Louisville, together with large and properly located steam power plants might well form the principal bases of such a system.

A combination of benefits may often be obtained through the improvement of a river if the structures are properly designed. Power and navigation have been combined with great success. The Keokuk development and those at Hales Bar and Muscle Shoals on Tennessee River are noteworthy examples and the same kind of improvement has been proposed for a number of other points along Tennessee River. The State of Illinois is now undertaking improvement of a similar nature for the Chicago drainage canal and Illinois River, where a complete program for water power and navigation has been mapped out. In other places flood control has been included in navigation and power enterprises. In the Western States it is a common practice to consider irrigation and power together, and water power

has formed an essential part of the public water-supply projects of San Francisco and Los Angeles.

The cost of improvement for a single purpose often renders a project inadvisable whereas, if other features were added and each bore its proportion of the cost, the project would prove profitable.

In order to illustrate how the development of water power might be connected with improvements which are primarily for another purpose, the writer has chosen Kentucky River as a



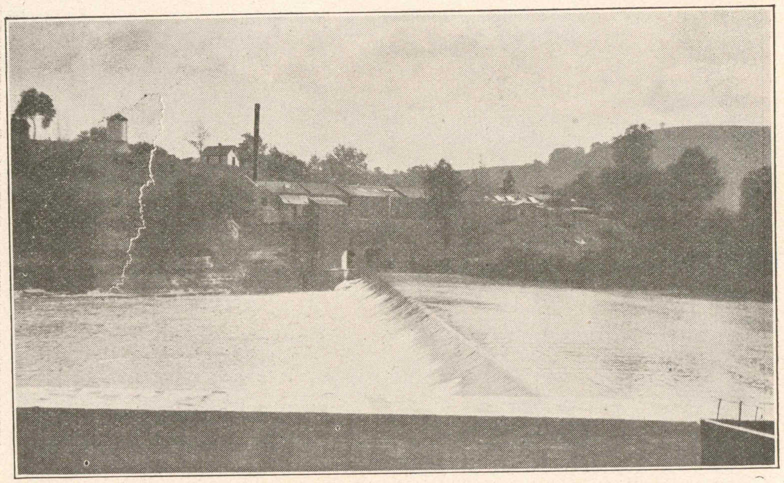
View of Kentucky River at Dam No. 14 at Heidelburg, Ky., taken Oct. 10, 1921. On this date there was approximately 1,000 horsepower of useful energy being dissipated at the toe of the dam.

specific example. This river has been improved so as to afford slack-water navigation from Ohio River to Beattyville, a distance of 260 miles, by means of a system of 14 locks and dams; the average lift of each is about 16 feet. Hence, the total fall of about 225 feet is concentrated at 14 different points.

The writer believes that successful development of water-power is achieved only when ample storage is provided for supplementing the low-water flow. At some places the flow is regulated naturally by large lakes, springs, or glacial-fed streams, but where these do not exist the low-water flow should be supplemented by artificial storage. This is true of the Kentucky River where the high-water flow is probably 1,000 times as much as the

extreme low-water flow. The Middle and South forks of the river appear to offer ample storage facilities for securing the desired regulation. If a dam ranging from 75 to 100 feet in height and a power plant were constructed on each of these streams and water-power equipment, all connected to a single transmission line, were installed at each of the 14 navigation dams, a power system would result from which it appears that practically constant power could be realized through careful regulation of the storage water.

Above Beattyville the river divides into three main forks,



View of Kentucky River at Dam No. 4 at Frankfort, Ky., taken Oct. 7, 1921, showing approximately 2,800 horsepower wasted energy.

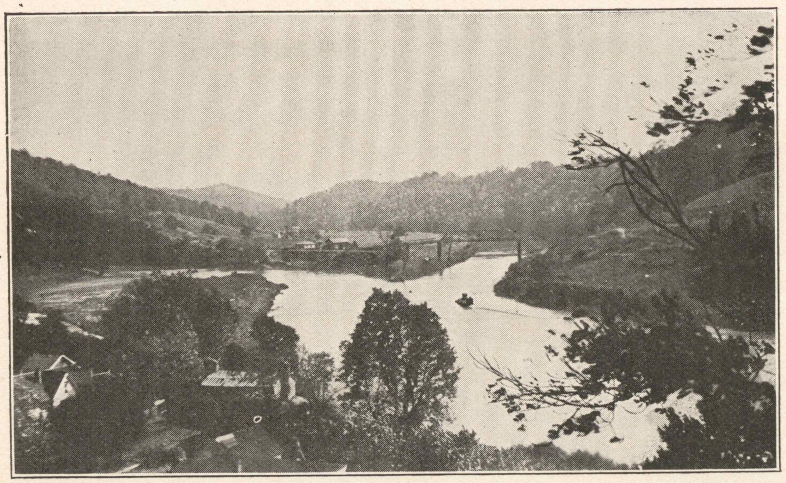
each having a much higher gradient than the main stream. Middle and South forks are free from railroads and there appear to be several feasible sites for the construction of high dams. If a site were chosen on Middle Fork just below Buck Creek and one on South Fork a short distance above Booneville, the catchment areas would be about 500 and 750 square miles, respectively. The mean annual run-off at these points is probably at least 500 and 750 second-feet, respectively; a yearly total of about 365,000 acre-feet for Middle Fork and 547,000 acre-feet for South Fork. Now, if dams 75 feet in height were constructed at the two points mentioned, the storage capacity of the reservoirs formed by each would probably be about 100,000 acre-feet, with

a flowage area of about 4 or 5 square miles. The stored water in these reservoirs would be sufficient to give a constant flow of 1,000 second-feet for a three months' period. This flow, added to the normal low-water flow of North Fork, would make the low-water flow at Beattyville at least 1,100 second-feet. Therefore a power plant located at the first dam below Beattyville, where the fall is 16 feet, would be capable of developing about 1,600 horsepower throughout the low-water season, and this figure would be increased at each dam downstream, owing to the inflow from other tributaries, until at the dams below Frankfort more than 2,000 horsepower could be developed, so that at the 14 dams the average horsepower would be about 1,800, giving a total development of about 25,000 horsepower. These power plants might all be equipped with the latest remote-control devices which would greatly lessen the cost of operation. They would all connect the same transmission line, and this line would pass through the heart of the Bluegrass region, which furnishes an extensive market for power. During high-water periods it would probably be possible to release enough water at the storage dams to generate sufficient power to make up the deficit when the navigation dams are either partly or completely drowned out. Under this condition there should be the same amount of generator capacity at the two storage dams as at the all navigation dams combined. If operated under a single system the power output could be regulated completely in accordance with the demand.

As the writer sees it, there is at present a total of about 225 feet concentrated at the navigation dams on Kentucky River which might well be used for the generation of power. The major cost of such a development is the construction of dams and as these are already constructed and flowage rights are already settled, all that remains to be done is to install the hydraulic and electrical equipment, and necessary transmission lines.

At this point it may be well to call attention to the development proposed and now under construction by the Dix River Power Company on Dix River near Highbridge, Ky. Dix River is an important tributary of Kentucky River and any development there would work in well with the scheme outlined above. The plans for the Dix River development call for a 275-foot dam across the gorge at a point where the crest length would be

only about 750 feet. This dam, which will be the highest east of the Rocky Mountains and one of the highest in the world will form a lake about 25 miles long. The company proposes to install equipment for developing about 25,000 horsepower at this point. When completed this will be the first large hydro-electric development in the State. A gaging station has been maintained at this site for the past ten years, in order to determine the flow. Without these data the project would probably not have been undertaken.



View of the Kentucky River at Beattyville, Ky. Slack water navigation extends about 4 miles above this point.

DRAINAGE

Drainage of swamp lands is a problem of great importance to the State of Kentucky, for drainage of these lands means additional homes and crops and therefore increased economic wealth. Considerable areas in several counties in the western part of the State are unfit for cultivation because of insufficient natural drainage, chief among which are the areas along the lower part of Green River and Tradewater Creek. This land is rich in vegetable mold and once it is properly drained is capable of producing bumper crops.

Drainage is accomplished by the construction of main canals, whose slope and capacity are sufficient to carry away the excess

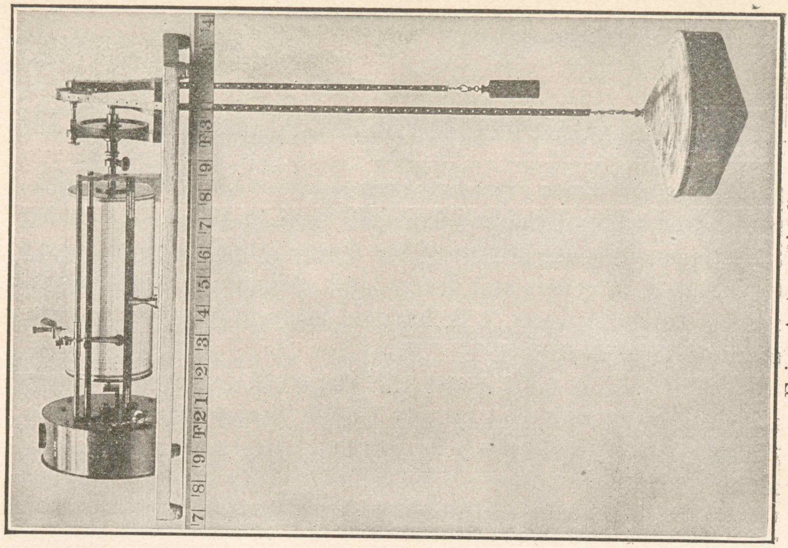
water from the whole area, and lateral canals and drains which conduct the water from the damaged land to the main canals. Accurate surveys are necessary for determining the most beneficial location of canals and drains, and adequate information as to the quantity of water to be handled is essential to the correct design of these drains.

The following table shows the status of drainage projects in Kentucky as compiled by the United States Bureau of the Census. These are advance figures and subject to future correction.

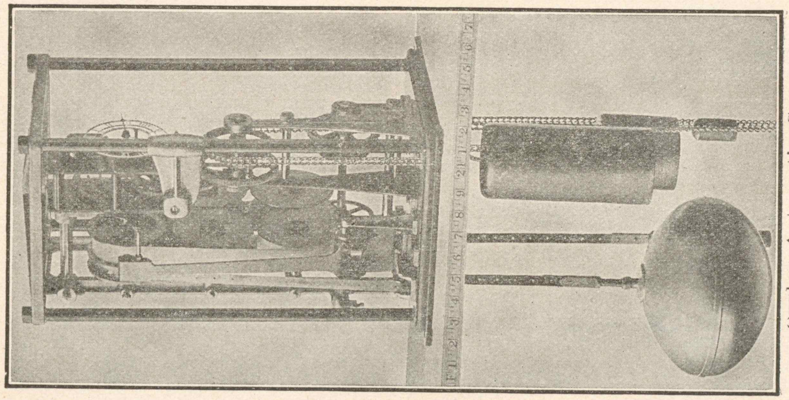
Status of drainage projects in Kentucky.

COUNTY	Total area in organized drainage projects.	Improved farm land.	Timbered and cutover land.	Other unimproved land.	Total area of county.	Area of county in drainage enterprise.	Cost of organized drainage enterprise.	Swampy or wet land in drainage enterprises.
	Acres	Acres	Acres	Acres	Acres	Per Cent		Acres
Ballard	11,904	4,160	5,738	2,006	161,280	7.4	$51,171	
Daviess	124,276	97,671	25,808	797	305,920	40.6	264,662	44,711
Carlisle Graves Hickman McCracken Marshall	34,058	12,552	6,347	15,159	985,600	3.4	132,166	2,250
Hancock	11,881	4,997	2,257	4,627	123,520	9.6	37,912	8,686
Henderson	52,342	36,297	7,553	8,492	278,400	18.8	207,541	14,425
Hopkins	22,934	10,236	10,96[illegible]	1,732	349,440	6.6	31,016	10,972
Jefferson	90,000	45,000	40,000	5,000	247,680	36.3	175,000	11,000
McLean	23,372	16,731	6,507	134	161,920	14.4	194,076	7,396
Ohio	12,961	9,919	2,193	849	373,760	3.5	79,695	1,960
Union	42,684	36,261	3,423	3,000	208,000	20.5	325,760	5,948
Webster	42,291	32,985	8,808	498	220,160	19.2	129,608	1,729
	474,538	310,754	121,270	42,514	25,715,840	1.8	$1,650,925	110,462

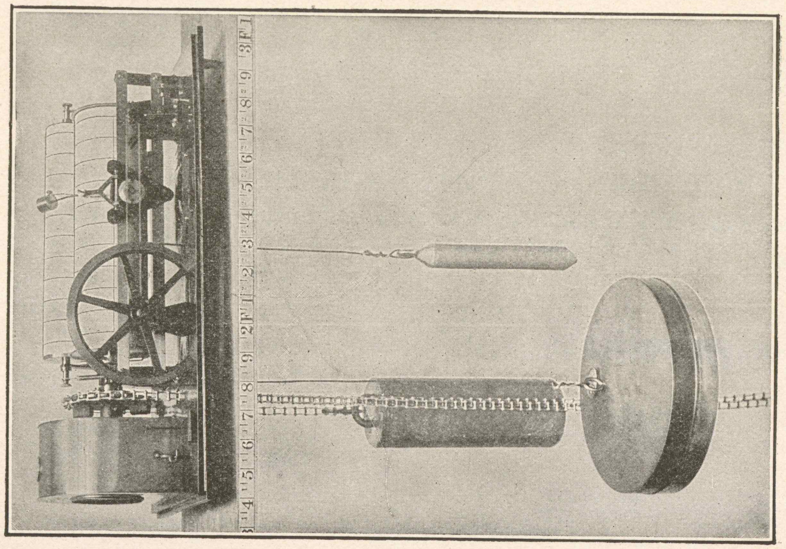
Other statistics compiled by Bureau of the Census show that there are still 573,300 acres of land in Kentucky needing drainage.



Friez Automatic Gage.



Curley Automatic Gage.



Stevens Automatic Gage.

CHAPTER II.

STREAM FLOW INVESTIGATIONS

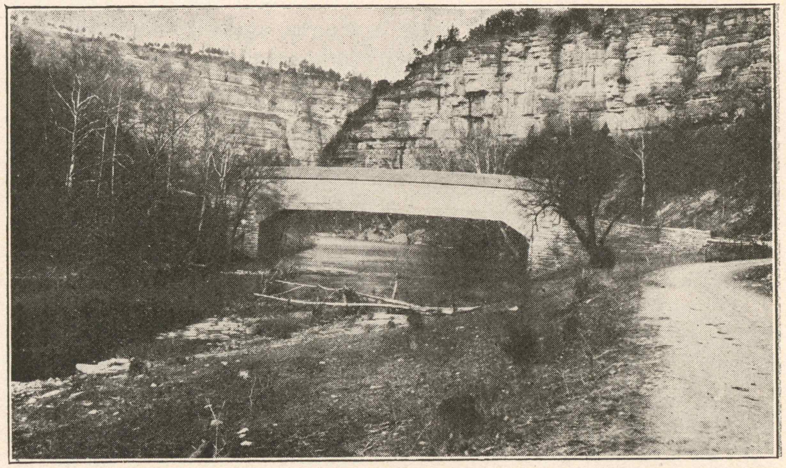
Value of Stream Flow Records

The foregoing chapter treats of the utilization of the streams of Kentucky and shows that public water supplies and industrial plants are dependent upon the quantity and the quality of the water; that navigation possibilities are determined by the quantity and the width and depth of water, and the structures for providing the same must be of sufficient stability to withstand maximum floods. Flood protection measures are dependent wholly upon the quantity of water and the condition of the cross sectional area of the channels through which it must pass. Water power is determined by the quantity of water in the streams and the head or the vertical distance that the water falls. Drainage of swamp or water logged lands is accomplished by providing sufficient channel capacity for carrying away the water from the land. Thus it is seen that wherever water is to be utilized, the quantity is the important factor, and it is the only factor that can not be readily determined within a short space of time.

The flow of water in any stream is extremely variable, not only from day to day but from year to year, and in order to obtain an adequate knowledge of the quantity of flow and its distribution throughout the seasons, it is necessary to carry on a systematic method of gaging throughout a period of years. The value of a stream-flow record increases directly as the length of record. It should never be less than five years and preferably, for base stations at least, not less than ten years. The longer the record, the more accurate can be the forecast, though ordinarily a ten-year period will include a combination of fairly low and high-water years, a knowledge of which is essential before undertaking the development of any large or important project.

People have too often been guided by the principle that "There is no use worrying about water which has gone over the dam." This is clearly shown by the lack of appropriations made for collecting data, for never has the annual appropriation for

stream gaging in Kentucky been more than a few hundred dollars, a trival sum for so broad a field of endeavor. We gain knowledge from past experiences and a knowledge of the water that has passed furnishes the only clue as to the quantity of water that may be expected to come in the future. Knowing what the discharge has been in the past it is then only a matter of mathematical calculation and engineering skill to construct works that will meet all requirements and fulfill all conditions to which they are apt to be subjected. The importance of stream-flow records is shown in the following excerpt from a letter that was written



Dix River Gorge near Burgin, Ky., about 3 miles above the proposed dam site of the Dix River Power Co. This dam will be 275 feet high and will extend from cliff to cliff. Gaging station is located at this bridge.

to Major H. C. Fiske, district engineer, U. S. War Department at Chattanooga, Tenn., by James W. Rickey, chief hydraulic engineer of the Aluminum Co. of America under date of November 23, 1920:

"Had it not been for the stream-flow records that have been taken by the Government on the Little Tennessee River and its tributaries since 1898, it is doubtful if our company would have undertaken this pretentious development. . . . Unfortunately we can not make our Congressmen and Senators view the matter in the proper light."

The taxes paid to the State of Tennessee in 1920 by this

company on the plant referred to amounted to more than $45,000. Probably almost as large a sum was paid in taxes to the State of North Carolina in connection with the same development. The above mentioned company has constructed one hydro-electric plant that has an installed capacity of 75,000 horsepower and their ultimate development will consist of nine such plants having a combined capacity of about 400,000 horsepower.

History of Stream-Gaging Work in Kentucky

Previous to 1910 the only records of stream flow in Kentucky were so fragmentary that they were of little or no value. In 1910 representatives of the Madison Electric & Power Co. established a gaging station on Dix River near Burgin, Ky., and records of flow have been continued at this station without interruption up to the present time.

In 1915 the State geologist of Kentucky entered into a cooperative agreement with the Director of the United States Geological Survey for the purpose of operating gaging stations at several places in the State, and as a result gaging stations were established on Cumberland River at Cumberland Falls, and at Burnside, Ky., on South Fork of Cumberland River at Nevelsville, Ky., and on Green River at Munfordville. Records at all of these places are continuous up to the present time, the work having been carried on through subsequent agreements between the above-named parties. During the same year the United States Engineer Corps cooperating with the United States Geological Survey established gaging stations on Eagle Creek near Glencoe; on Elkhorn Creek at the Forks of Elkhorn; on Levisa Fork at Thelma; on Tug Fork at Kermit, W. Va.; and on Blaine Creek at Yatesville. These records likewise have been continued to date. From the above it will be noted that at only one point in the State, Dix River near Burgin, is a ten-year stream-flow record available and only nine other places have records of five years' duration been obtained. All these data previous to October, 1918, have appeared in United States Geological Survey Water Supply papers but are republished here

for the sake of convenience. The following summary shows the status of stream-gaging work in Kentucky.

GAGING STATIONS IN KENTUCKY

BIG SANDY RIVER BASIN:

1. Levisa Fork at Thelma, Ky.
   Established June 1, 1915.
   Operated at present by U. S. Engineer Corps, 2d Cincinnati District. Daily discharge published for 1915 and 1916; gage heights and measurements in 1917. Shift occurred in 1917. No discharge measurements made since March, 1917. Computations of discharge for 1918, 1919, and 1920 have been made by U. S. Engineer Corps.
2. Tug Fork at Kermit, W. Va. (on State line).
   Established June 1, 1915.
   Operated at present by U. S. Engineer Corps, 2d Cincinnati District. Daily discharge published for 1915 to 1917. No discharge measurements made since May, 1917. Discharge computed for 1918, 1919 and 1920 by U. S. Engineer Corps.
3. Blain Creek at Yatesville, Ky.
   Established June 1, 1915.
   Operated at present by U. S. Engineer Corps, 2d Cincinnati District. Daily discharge published for 1915 to 1917. No discharge measurements since April, 1917. Discharge computed for 1918, 1919, and 1920 by U. S. Engineer Corps.

LICKING RIVER BASIN:

4. Licking Diver at Farmers, Ky.
   Established July 20, 1915; discontinued June 30, 1920.
   Maintained by U. S. Engineer Corps, 1st Cincinnati District. Gage heights only published for 1915 to 1917. No measurements since November 9, 1916. Fair rating curve developed for low stages.
5. Licking River at Falmouth, Ky.
   Established January 1, 1914; discontinued July 31, 1916. Maintained by Public Health Service during 1914 and 1915, thereafter by U. S. Engineer Corps, 1st Cincinnati District. Daily discharge published for August, 1915, to July, 1916. Discharge computed only for time that a station was in operation on South Fork as the gage on Licking River indicates flow below the junction except at low stages.
6. Licking River at Catawba, Ky.
   Established July 14, 1916. Discontinued July 5, 1920.
   Maintained by U. S. Engineer Corps, 1st Cincinnati District. Discharge published for 1916 and 1917. Rating curve based on measurements made in October, 1916, and January, 1917. No measurements since January, 1917.
7. Licking River at Morning View, Ky.
   Established September 17, 1915; discontinued September 30, 1916.
   Maintained by U. S. Engineer Corps, 1st Cincinnati District. Occasionally affected by backwater from Ohio River. Discharge computed and published.
8. South Fork of Licking River at Hayes, Ky.
   Established July 7, 1916; discontinued July 6, 1920. Maintained by U. S. Engineer Corps, 1st Cincinnati District. Rating curve not determined. No measurements since January, 1917. Gage heights and measurements published in 1916 and 1917.

9. South Fork of Licking River at Falmouth, Ky.
   Established July 27, 1915; discontinued July 31, 1916. Maintained by U. S. Engineer Corps, 1st Cincinnati District. Backwater from Licking River during high stages. Discharge computed and published.

KENTUCKY RIVER BASIN:

10. Kentucky River at Frankfort, Ky.
    Established March 18, 1905; discontinued July 21, 1906. Located at the government dam. Published record consists of gage heights and one discharge measurement.
11. Dix River near Danville, Ky.
    At Danville city water-works dam. Gage heights only May 1 to August 26, 1905.
12. Dix River near Burgin, Ky.
    Established July 2, 1910. Originally maintained by State Geological Survey and Madison Electric & Power Co. At present operated by Tennessee district in cooperation with State geologist. Discharge published to 1920.
13. Elk Creek at Forks of Elkhorn, Ky.
    Established April 26, 1915.
    Operated at present by U. S. Engineer Corps, 2d Cincinnati District. Discharge computed and published for 1915 to 1917.
    No discharge measurements made since July, 1917. Computations of discharge for 1918, 1919, and 1920 have been made by U. S. Engineer office.
14. Eagle Creek at Glencoe, Ky.
    Established April 29, 1915.
    Operated at present by U. S. Engineers, 2nd Cincinnati District. Discharge published for 1915 to 1917. One discharge measurement made since May, 1917, by United States Geological Survey. Computations of discharge made by U. S. Engineer Corps for 1918, 1919, and 1920.

SALT RIVER BASIN:

15. Rolling Fork of Salt River at New Haven, Ky.
    Established June 16, 1905; discontinued March 31, 1906.
    Published record consists of gage heights and two discharge measurements.

GREEN RIVER BASIN:

16. Green River at Munfordsville, Ky.
    Established February 27, 1915.
    At present operated by Tennessee district in cooperation with State geologist. Discharge published to September 31, 1920.

CUMBERLAND RIVER BASIN:

17. Cumberland River at Cumberland Falls, Ky.
    Established April 1, 1915. (Records August, 1907, to December, 1911, obtained at same location by Viele, Blackwell & Buck).
    At present operated by Tennessee district in cooperation with State geologist of Kentucky. Discharge published to September 30, 1920. Station well rated.
18. Cumberland River at Burnside, Ky.
    Established October 1, 1914. Long record of gage heights by

Weather Bureau. Gage is on South Fork but indicates flow of main stream below junction. At present operated by Tennessee district in cooperation with State geologist of Kentucky. Discharge published for 1914 to 1920.

19. South Fork Cumberland at Nevelsville, Ky.
Established March 10, 1915.
Operated at present by Tennessee district in cooperation with State geologist of Kentucky. Discharge published to September 30, 1920.

SUMMARY:
At present five stations are being operated by U. S. Engineer Corps, 2d Cincinnati District, and five stations by Tennessee district United States Geological Survey, in cooperation with the State geologist. Three stations formerly operated by the 1st Cincinnati District, U. S. Engineer office were discontinued in 1920.

Physiography

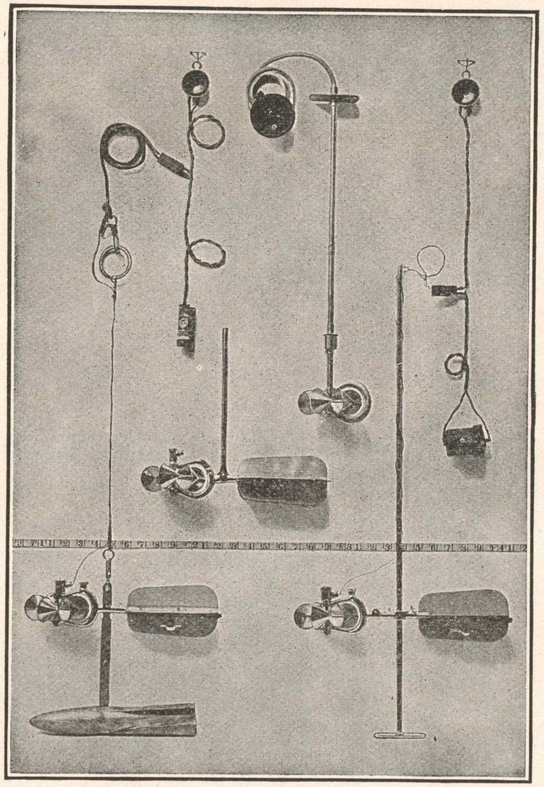
The physiographic features of the State are extremely varied. The mountainous Cumberland Plateau area in the eastern part of the state merges into rugged hilly land, thence into low plateau land which comprises a large part of the State, and finally into the low lands situated along the rivers near the western boundary of the State.

The mountain district comprises about one-fifth of the area of the State and has the general characteristics of the Appalachain region of which it is a part. The ranges, which are deeply cut at intervals by rivers, are long and narrow and extend northeastward. The elevation of the highest points of the mountain ranges that form the eastern boundary of Kentucky is slightly over 4,000 feet, but the average elevation of these ranges is about 3,000 feet. These mountains for the most part are heavily forested.

The area bordering the mountain district and extending westward and northwestward for a considerable distance has a very rough and rugged topography. This region is known as the Mississippi Plateau. It is interspread with occasional hills several hundred feet in height and is deeply cut by large and small water courses.

The famous Blue Grass region lies northwest of this rugged area and extends to Ohio River. The general elevation of this region is from 800 to 1,000 feet; the hills along the southern boundary reach an elevation of 1,500 feet and the land along Ohio River on the north has an elevation of about 400 feet.

Still farther westward the physical features are more like a vast, yet varied table-land. Extensive erosion by streams has rendered the surface uneven, although there are no great differences in elevation.



Price Current Meters.

Storms and Precipitation

The State lies in the normal storm paths, especially in the path of rain bearing storms which originate in the Southwest or on the western coast of the Gulf of Mexico. These storms usually move northeastward, pass up the Mississippi Valley and on entering the Ohio Valley bring general and frequent rains to Kentucky. The Precipitation increases with altitude, the highest average precipitation occurring in the upper Cumberland region

and the lowest in the lower Licking River valley. The average annual precipitation ranges in different parts of the State from about 35 to 51 inches; the average for the State is about 45 inches. From year to year the annual precipitation at any single point may vary more than 100 per cent. The maximum precipitation usually occurs in March, and the minimum occurs during the months of September and October.

CHAPTER III.

RIVER SYSTEMS

The principal river systems of the State are the Ohio and its tributaries, consisting of the Big Sandy, Licking, Kentucky, Salt, Green, Tradewater, Cumberland, and Tennessee rivers. These will be briefly discussed in the order named.

Ohio River.

The Ohio is a river of such vast national importance that its improvement and utilization can only be very briefly mentioned in a report of this kind. In point of drainage area it ranks as the sixth river in the United States, and includes 204,000 square miles, lying in 14 different states. As regards quantity of water carried it is probably exceeded only by the Mississippi and the Columbia.

The normal drop in water level from Catlettsburg to the mouth, a distance of about 650 miles, is 220 feet or an average of about 4 inches per mile of river. This fall is quite uniformally distributed except at Ohio Falls at Louisville, where in a short distance the river has a normal drop of about 26 feet.

The minimum flow of the Ohio at the mouth is probably about 25,000 second-feet and the maximum flood discharge in the neighborhood of 1,500,000 second-feet. At Louisville the extremes are probably somewhat less than half the above figures.

The extreme range in stage at various points along the river in Kentucky is from 45 to 72 feet.

Navigation improvements of one character or another have been in progress on the Ohio for nearly one hundred years, but the first dam to provide slack water under the existing project for complete cannalization was completed in 1885. Prior to that time improvements consisted principally of open channel work. The present project, which is being carried out by the U. S. Army Engineer Corps, consists of providing nine foot navigation throughout the length of river from Cairo to Pittsburg by

means of locks and dams of the movable type with navigation passes. Fifty-two such dams are included in the project of which 37 are completed and 7 more are under construction. When the latter are placed in operation the 9 foot project will have been completed between a point 50 miles below Louisville and Pittsburg. The average lift of these locks except for those at Ohio Falls is about 8 feet.

The United States Weather Bureau has obtained and published daily records of stage at a number of points along the Ohio and the following table lists such points adjacent to Kentucky, together with length of record and extreme high and low readings, as given in Daily River Stages for 1920 by the Weather Bureau.

STATION	Period of Record		Maximum		Minimum	
	From	to	Stage	Date	Stage	Date
Normal, Ky. Dam No. 29	Nov., 1916	Date	68.3	Mar. 31, 1913	—0.1	Oct. 20, 1920
Oliver, Ky. Dam No. 30	May, 1919	Date	......	......	0.0	Oct. 21, 1920
Portsmouth, O.	June, 1887	Date	67.9	Mar. 31, 1913	0.9	Oct. 21, 1920
Vanceburg, Ky. Dam No. 32	July, 1919	Date	......	......	0.2	Oct. 22, 1920
Maysville, Ky.	Oct., 1904	Date	66.4	Mar. 31, 1913	1.3	Oct. 18, 1892
Cincinnati, O.	May, 1873	Date	71.1	Feb. 14, 1884	1.9	Sept. 17, 1881
Fernbank, O. Dam No. 37	Feb., 1913	Date	65.4	Feb. 14, 1884	—0.7	1911
Florence, Ind. Dam No. 39	Jan., 1916	Date	61.7	Apr. 1, 1913	0.0	......
Madison, Ind.	Nov., 1899	Date	62.8	Apr. 1, 1913	2.5	Oct. 7, 1904
Louisville, Ky.	May, 1873	Date	46.5	Feb. 15, 1884	1.7	Sept. 10, 1881
Cloverport, Ky.	Dec., 1913	Date	55.8	Feb., 1884	0.7	Nov. 23, 1914
Evansville, Ind.	Apr., 1873	Date	48.4	Apr. 5, 1913	—0.3	Nov. 7, 1895
Henderson, Ky.	Oct., 1909	Date	47.9	Apr. 5, 1913	1.0	Oct. 14, 1904
Mt. Vernon, Ind.	Oct., 1904	Date	52.9	Apr. 5, 1913	......	Sept. 11, 1904
Shawneetown, Ill.	June, 1910	Date	59.5	Apr. 5, 1913	0.0	1856
Paducah, Ky.	May, 1873	Date	54.3	Feb. 23, 1884	—0.7	Oct. 30, 1895
Cairo, Ill.	June, 1871	Date	54.8	Apr. 4, 1913	—1.0	Dec. 24, 1871

No regular discharge gaging stations have been maintained on this stretch of river and the only authentic records of flow available are a few discharge measurements made by the U. S. Army Engineers during the low water seasons of 1892 and

1895, and listed in the Chief of Engineers reports for those years.

These are shown in the following table:

Date	Location	Gage Height	Area	Mean Velocity	Discharge
1892		Ft.	Sq. ft.	Ft. per sec.	Sec.-ft.
Oct. 24	Below mouth of Scioto River	0.95	4816	1.41	6775
Oct. 25	Below mouth of Scioto River	0.90	4806	1.37	6606
Nov. 1	Below mouth of Kentucky River	1.20	12479	0.55	6894
Nov. 1	Below mouth of Kentucky River	1.20	12439	0.61	7627
Nov. 2	Below mouth of Kentucky River	1.30	12547	0.63	7979
Nov. 19	Below mouth Wabash River	3.07	15722	1.29	20293
Nov. 22	Below mouth Cumberland River	4.65	12756	2.03	25927
Nov. 24	Below mouth Tennessee River	4.90	51996	1.77	92104
1895					
Nov. 2	[illegible] miles above mouth Tennessee River	—.70	5509	1.855	10218
Nov. 4	At Paducah below Tennessee River	—.68	27373	.815	22303
Nov. 5	At Paducah below Tennessee River	—.61	27931	.714	21262
Nov. 6	2 mi. above mouth Tennessee River	—.57	5497	1.827	10041
Nov. 6	Tennessee Riv. 1000 ft. above mouth	—.57	6915	1.533	10601
Nov. 10	2 miles above Bay City, Ill.	0.44	3427	2.670	9149
Nov. 11	At Bay City, Ill.	0.46	21924	.418	9174

NOTE.—Gage heights for measurements made in 1892 are referred to the low water of 1881. Measurements of Nov. 2-6, 1895, are referred to Paducah gage, those of November 10, 11 are referred to the Bay City gage.

The report of the Chief of Engineers for 1902 also shows a discharge measurement made at Louisville when the stage was 8 feet, discharge was 112,520 second-feet.

The population of the Ohio River water-shed is roughly about 15,000,000 people, a large proportion of which is situated in the Ohio River Valley proper. The river is used alternately for public water supply and sewage disposal by many large cities and necessarily this fact has given rise to a great deal of concern over the public health at points farther downstream. The problem has been investigated to a considerable extent by the U. S. Public Health Service and by the cities themselves, to determine the extent of polution which exists and to derive ways and means of protecting public water supplies from injurious elements. This can and is being accomplished by means of modern sewage disposal plants and filteration plants for the purification and treatment of raw water.

Water power development on the Ohio is not practicable at any point except at Ohio Falls, where there is a concentrated fall of about 26 feet. Dams such as those used on this river are

not adapted to the development of power and are serviceable for only the purpose for which they were intended, viz., to provide adequate water transportation from Pittsburg to the mouth.

There has been much discussion during the past 20 years regarding the power resources at Ohio Falls and indications are now this historic piece of river will soon be put to the task of supplying electrical energy to a large industrial region. The Federal Power Commission has granted a preliminary permit for power development at this site, to the Louisville Gas and Electric Company, this development to be included in the latest plans of the War Department for navigation improvement. The final plans for the project have not been worked out but in all probability the installed capacity of the plant will be at least 100,000 horsepower. This, of course, does not mean that the plant will produce 100,000 horsepower at any and all times, for there are long periods during the low-water seasons when the stream flow is not sufficient to produce more than one-fourth this amount of power and also during times of high water the head is very materially reduced so that only a portion of that amount can be realized. For economical development this project must be supplemented by an adequate reserve consisting of additional hydro-electric plants which operate largely on stored water or stream generating plants, sufficient to make up the deficiency of this plant during times of extreme high and extreme low water.

As suggested earlier in this report it seems probable that the Ohio Falls development will some time become one unit of a large super-power system which will envelope the greater part of the Central States east of the Mississippi.

Big Sandy River

Big Sandy River is formed by the confluence of Levisa and Tug Fork, flowing northward for 26 miles and empties into Ohio River at Catlettsburg. Most of its channel is narrow and confined between high hills. The average width is about 300 feet and it has an average fall of 1 foot to the mile. The drainage area above the mouth of the river is 4,182 square miles. The extreme low-water discharge is about 200 second-feet. The United States Engineer Corps made a discharge measurement at

the mouth of the Big Sandy during the low-water season of 1875 and found 753 cubic feet per second flowing at that time. The result of a series of discharge measurements made by the United States Engineer Corps at a point just below dam No. 3 at Louisa are given in the following table:

Discharge measurements of Big Sandy River below dam No. 3 Louisa, Kentucky.

Date	Stage above low water.	Mean Velocity.	Discharge.	Remarks
	Feet	Feet Per Sec.	Second-Feet	
Oct. 22, 1897	0.0		48	After completion of dam
Oct. 23, 1900	1.3	1.47	251	
June 10, 1886	1.9	1.80	1,242	
1891	2.3		1,794	Exact date unknown
July 24, 1891	3.3	2.11	2,425	
1891	3.3	2.72	3,319	Exact date unknown
1891	4.3	2.99	4,910	Exact date unknown
July 25, 1891	4.4	2.76	4,029	
July 28, 1891	5.1	2.88	4,817	
1891	5.3	3.21	6.362	Exact date unknown
1891	6.3	3.42	7,750	Exact date unknown
July 26, 1891	6.5	3.14	6,463	
Apr. 18, 1886	6.9	1.00	2,000	Backwater from Ohio
Aug. 24, 1891	7.2	3.89	8,980	
1881	7.3	3.56	9,088	Exact date unknown
1891	8.3	3.72	10,525	Exact date unknown
Aug. 24, 1891	8.9	4.00	11,140	
1891	9.3	4.06	12,585	Exact date unknown
Aug. 24, 1891	9.6	4.50	13,437	
1891	10.3	4.21	14,238	Exact date unknown
Feb. 17, 1886	11.0	4.10	14,990	
1891	11.3	4.30	15,938	Exact date unknown
Aug. 26, 1891	12.1	3.83	14,269	
1891	12.3	4.64	18,900	Exact date unknown
1891	13.3	4.71	20,850	Exact date unknown
Aug. 25, 1891	13.3	4.73	19,678	
1891	14.5	4.70	21,505	Exact date unknown
Mar. 31, 1886	23.3	6.30	45,250	

Taken from H. Doc. 235, 56th Cong., 2d sess.

Levisa Fork rises in the high Cumberland Plateau in southwestern Virginia and flows northwestward 142 miles to its junction with Tug Fork. Its drainage area is 2,200 square miles. The average fall in the 86-mile stretch between Pikeville and Louisa, is 1.5 feet to the mile.

In 1875 the low-water discharge at Becks Shoal and near Big

Shoal Branch was determined by the United States Engineer Corps as 33 and 60 cubic feet per second respectively. The following table gives results of discharge measurements made by the United States Engineer Corps during 1899 and 1900:

Discharge measurements of Levisa Fork.

Date	Location	Stage Above Low Water	Discharge
		Feet	Second-feet
1899			
Nov. 8	Above Gallup	0.2	56
1900			
Oct. 22	Above Gallup	.5	120
Sept. 22	Above Gallup	.7	358
Sept. 22	White House	.7	282
Sept. 23	Paintsville	.7	230
Sept. 24	Prestonsburg	1.3	249
Sept. 24	Mud Creek	2.0	947
Sept. 25	Pikeville	1.4	848

Taken from H. Doc. 235, 56th Cong., 2d sess.

In the 12-mile stretch between Pikeville and the mouth of Russell Fork the fall of the river is about 40 feet. From the mouth of Russell Fork to Grundy, a distance of 40 miles, the fall of the river is about 350 feet.

Russell Fork, the principal tributary of Levisa Fork, is the most torrential stream in this basin. In the 12-mile stretch between Elkhorn City and the junction with Levisa Fork the fall is about 100 feet, and in the 10-mile stretch which extends from just above Elkhorn City into Virginia, the fall is nearly 500 feet. This is the highest gradient on any large stream in the State.

Tug Fork forms the boundary between Kentucky and West Virginia above Levisa. The physical features are similar to those on Levisa Fork. The fall in the stretch between its confluence with Levisa Fork and Warfield, a distance of 35 miles, is about 60 feet. In the 50-mile stretch between Warfield and the State line the fall is about 200 feet, an average of 4 feet to the mile. The following table gives results of discharge measurements made by the United States Engineer Corps during 1899 and 1900:

Discharge measurements of Tug Fork.

Date	Location	Stage Above Low Water	Discharge
1899		Feet	Second-feet
Nov. 7			
1900	Dam Vinson's	0.3	63
Oct. 23	Dam Vinson's	.5	78
2	Falls	1.0	171
3	Warfield	1.1	193
4	Williamson	1.2	192

Taken from H. Doc. 235, 56th Cong., 2d sess.

The main part of the great Kentucky-Virginia coal region lies in the Big Sandy basin.

Five movable-crest dams with locks have been constructed on the Big Sandy, three on the main river and one on each of the forks; these afford 6-foot navigation from Ohio River to points 18 miles above the mouth of Levisa Fork, and 12 miles above the mouth of Tug Fork. Above these points channel improvements have been made as far as Pikeville and the mouth of Pond Creek and these make navigation possible during several months of the year.

Observations of river stage have been made by the United States Weather Bureau at the following points in this basin:

Stream	Place	Period of record	Maximum stage, ft.	Date	Minimum stage, ft.	Date
Big Sandy	Louisa	1912-1920	48.0	Apr. 3, 1908	0.7	
Louisa Fork	Pikeville	1907-1920	50.0	Jan. 28, 1918	.1	Sep. 10, 1887
Tug Fork	Williamson	1901-1920	38.3	Jan. 29, 1918	—.8	
Russell Fork	Elkhorn	1917	18.0		1.0	1916

LICKING RIVER.

The watershed of Licking River lies entirely within the State of Kentucky. Licking River rises in Magoffin County, flows northwestward for a distance of 320 miles, and empties into Ohio River just opposite Cincinnati. Most of the drainage area is rugged and hilly; and the entire course of the stream is extremely tortuous. The drainage area comprises 3,734 square miles and is long and narrow; consequently the trubutaries are short and have steep slopes which cause very rapid run-off after

storms. Practically complete denudation of the basin also serves to accelerate the rapidity of run-off so that the low-season flow is extremely small for a drainage area of this size.

Low-water discharge measurements made by the United States Army Engineer in 1875 show 13 cubic feet per second flowing on September 23 at West Liberty and 19 cubic feet per second flowing on November 8 just below Salyersville. The discharge at the mouth of the river during extreme low water was determined as 14 cubic feet per second. The largest tributary, South Fork, is said to have been almost dry at times.

The fall in the 275-mile stretch between Salyersville and the mouth of the river is 409 feet; an average of about 1.5 feet to the mile.

In the period 1837-1840 the State of Kentucky made an unsuccessful attempt to provide slack-water navigation in this stream through a system of about 21 dams. The project was abandoned after an expenditure of more than $370,000. Several subsequent surveys and investigations have been made by the Government to determine the navigability of Licking River and each time the project has been reported unfavorable.

Observations of river stage have been made by the United States Weather Bureau at the following points in this basin:

Stream	Place	Period of record	Maximum stage, ft.	Date	Minimum stage, ft.	Date
Licking River	Falmouth	1887-1920	48.3	1854	0.0	Sep. 12, 1887
Licking River	Farmers	1904	31.1	Feb. 9, 1918	.5	
So. Fk. Licking R.	Cynthiana	1917-1920	21.0	Mar. 27, 1913	.0	

KENTUCKY RIVER.

Kentucky River is formed by the confluence of North, Middle, and South forks at Beattyville, the sources of which are in the mountainous area in the southeastern corner of the State. These tributaries as well as the main stream flow northwestward. The Kentucky drainage basin, which comprises 6,900 square miles, lies wholly within the State. The upper part of the basin above Beattyville is rugged and mountainous, and change in

topography from here to the point where the river enters the Blue Grass region, some miles below Irvine, is more or less gradual. For the most of the distance through the Blue Grass region above Frankfort, the river flows in a deep gorge, the walls of which consist principally of limestone and are practically vertical in places for a height of 200 to 300 feet. Below Frankfort the river valley widens perceivably and the canyon is less pronounced.

In the 255-mile stretch between Beattyville and the mouth, the total fall is 226 feet, an average of about 0.9 foot to the mile. Slack-water improvement has been made throughout this stretch by means of a system of 14 locks and dams, whose average lift is about 16 feet. The gradient on the forks is much higher than on the main stream. From Hazard, Hyden, and Manchester to the junction with the main stream the average fall to a mile is about 1.7 feet on North Fork, 2.5 feet on Middle Fork, and 3.1 feet on South Fork; above those points these streams themselves split up, and the slope increases rapidly.

The principal tributaries of Kentucky River below Beattyville are: Red River, Dix River, Elkhorn Creek, and Eagle Creek.

Red River rises in Wolfe County and flows almost due west to its junction with Kentucky River. For a large part of its course it flows through a wide flat valley.

Dix River rises in Rockcastle County, flows northwestward, and joins Kentucky River just above Highbridge. From the mouth of Hanging Fork, 6 miles due east of Danville, to Kentucky River at Highbridge, the distance by river is 37 miles, though the air-line distance is only about 13 miles; this gives a fair conception of the very crooked course of the stream. Throughout this stretch the river has cut through the limestone rock and flows in a gorge whose walls rise almost perpendicularly to a height ranging from 100 feet at the upper end to 300 feet near the mouth of the River. The total fall in this stretch is about 200 feet, an average of about 5.4 feet to the mile. This river has been investigated for its water-power possibilities and a report concerning the same is contained in Kentucky Geological Survey Bulletion 21, series 28.

Both forks of Elkhorn Creek rise in Fayette County and

flow northwestward to their junction at Forks of Elkhorn 5 miles east of Frankfort, thence the stream continues north and west and joins Kentucky River 10 miles north of Frankfort. Below the Forks the stream meanders through a comparatively wide valley which it has cut down about 200 feet below the bordering highlands. In general the gradient of Elkhorn Creek is high and increases as the stream nears the mouth. The average slope on the forks is 4 to 5 feet to the mile, and on the lowest 10 miles of the main stream the total is about 100 feet or an average of 10 feet to the mile. The drainage area above the Forks is 415 square miles.

There appears to be an attractive waterpower proposition on Elkhorn creek about 3 miles above its junction with Kentucky river provided land damages in the valley do not prove prohibitive. The drainage area at this point is 467 square miles or 15 per cent larger than the Dix River, which is now being developed. A dam 125 feet high having a crest length of about 2,000 feet would create a reservoir or lake 5 miles in length and more than a mile in width, sufficient to hold the entire average annual runoff from the stream, estimated at 128,000,000 cubic feet or 200,000 acre-feet. The area submerged would be approximately 3,600 acres. By conducting the water to a power house located on the bank of Kentucky River and discharging into the pool from Lock 3 an additional 20 to 25 feet of head could be gained. Assuming an average annual discharge of 300 second-feet with regulation completely effected by the reservoir, it should be possible to generate 4,000 horsepower continuously throughout the year or 10,000 horsepower with 40 per cent load factor or operating 10 hours per day. This site is in a most excellent location as regards nearness to market being only 10 miles from Frankfort, 25 miles from Lexington and 50 miles from Louisville and Cincinnati, in fact it is practically the center of largest load centers of the State. The great value of a project of this kind lies in its flexibility and for best results should be operated in conjunction with a large central system where it can be used to carry peak loads and take the place of a standby plant or operated in conjunction with other hydro-electric plants which operate on stream flow only. If operated for three low-water months, only this development would be capable of producing 16,000

horsepower continuously. For short periods it could be made to carry most any desired load, the amount depending only upon the installed plant capacity.

Eagle Creek heads in Scott County, flows north for 30 miles, then southwest for 20 miles and joins Kentucky River 8 miles above its mouth. The drainage area above Glencoe is 445 square miles.

Observations of river stage have been made by the United States Weather Bureau at the following points in Kentucky River Basin:

Stream	Place	Period of record	Maximum stage, ft.	Date	Minimum stage, ft.	Date
Kentucky River	Jackson	1904-1920	39.0	Mar., 1913	0.6	Oct. 21, 1904
Kentucky River	Beattyville	1902-1920	46.3	Feb. 23, 1890	—1.7	Oct. 27, 1904
Kentucky River	High Bridge	1901-1920	34.6	Mar. 27, 1913	4.7	Nov. 24, 1912
Kentucky River	Frankfort	1898-1920	44.0	Feb., 1878	.4	....

Salt River

Salt River heads near the center of the State just west of Danville. It flows north nearly to Lawrenceburg where it turns sharply to the right and flows west across Anderson, Spencer, and Bullitt counties to its junction with Ohio River at West Point, Ky. The drainage area of about 2,800 square miles embraces some of the most fertile land in the State. The land is more or less rolling with no large differences in elevation, and is almost entirely cultivated. The principal tributary is Rolling Fork whose drainage area is about half as large as that of the main stream. It occupies the southern half of the Salt River drainage area and is similar in character to that stream. Beech Fork, a tributary of Rolling Fork, is also an important stream. Examinations have been made by the United States Engineer Corps, from time to time, on both Salt River and Rolling Fork to determine the navigability of these streams. The proposals to make these streams navigable by a system of locks and dams were always reported unfavorable.

Green River

The Green River basin comprises a large part of the tobacco

belt of western Kentucky. It has a drainage area of about 9,600 square miles, that lies in 25 counties and is almost wholly within the State. The surface is rather uneven and is interspersed with occasional hills, which range from 300 to 400 feet in height and are cut by river channels to depths of 100 to 200 feet at irregular intervals. Many of the irregularities in the surface, such as surface depressions or sinks, are caused by solution cavities in the limestone strata, which underlie the whole area. These depressions, which have no surface outlet, are characteristic of the entire basin and account for the vast number of springs to be found here. Many of these springs are large and maintain a strong flow throughout the year. In at least one instance a town having a population of more than 1,000 obtains its water supply from one of these springs, and at another point the water from a spring is used to develop more than 100 horsepower at a hydro-electric power station on Green River. The larger part of the low-season flow in Green River is sustained by springs. Mammoth Cave is typical of many other large solution cavities in this region which have entrance from the surface. Doubtless the underlying formation is honey-combed with such cavities which are filled in or covered up with surface alluvium.

Slack-water navigation has been provided on Green River from its mouth to Mammoth Cave, a distance of nearly 200 miles, and on Barren River from its mouth to Bowling Green. There are six locks and dams on Green River, one on Barren River, and one on Rough River. The total fall in the 76.5-mile stretch between Greensburg, Ky., and Mammoth Cave is 112.7 feet, an average fall of about 1.5 feet to the mile.

The city of Louisville recently filed an application, with the Federal Power Commission, for a preliminary permit to develop power on Green River by means of a dam 150 feet high located in the vicinity of Mammoth Cave. The permit has not yet been granted.

The principal tributaries of Green River are Nolin, Barren, Mud, Rough and Pond rivers.

Observations of river stage have been made by the United States Weather Bureau at the following points in the basin:

Stream	Place	Period of record	Maximum stage, ft.	Date	Minimum stage, ft.	Date
Barren River	Bowling Gr.	1901	36.5	Jan. 3, 1919		
Green River	Rumsey	1909-1920	41.3	Mar. 24, 1919	6.2	Oct. 9, 1918
Green River	Woodbury	1917-1920	48.2	Jan. 5, 1919	5.5	Oct. 9, 1918
Green River	Brownsville	1917-1920	45.0	Jan. 4, 1919	6.1	Sep. 10, 1919

Tradewater River

Tradewater River rises in Christian County and flows northeastward to Ohio River. Its basin occupies more or less of a diamond-shaped area lying between Green and Cumberland rivers. The basin embraces large areas of swamp land as well as much highly developed agricultural land. The valley of the main river and its tributaries are wide, and the streams are tortuous and have little fall. The rest of the land is rough and irregular. In addition to the agricultural activities the basin supplies vast quantities of high grade coal.

The river has an average width of about 100 feet toward its lower end, and some say that at shoals during low-water periods one might walk across the stream dry shod. Discharge measurements by the United States Engineer Corps in 1881 showed the following results: September 7, near mouth of river, discharge 22.6 second-feet; October 21, at Commercial, discharge 11.2 second-feet. This was a year of extremely low water, and in the average year the low-water flow is probably much greater.

The United States Army Engineers have reported unfavorably several times upon slack-water improvements for navigation on this stream.

Cumberland River

Cumberland River rises in the Cumberland Mountain range forming the border between Virginia and Kentucky, follows an extremely winding and irregular westerly course through Kentucky and Tennessee, and emptying into Ohio River at Smithland, Ky., 12 miles up stream from Paduach and the mouth of Tennessee River. The upper part of the drainage basin is mountainous, and the river is walled in on either side by steep hills which rise 300 feet or more in height. From Burnside, Ky. to

the mouth of the river the air-line distance is about 205 miles, but the distance by river between these points is 518 miles, of which 203 miles lies in Kentucky and 315 miles in Tennessee.

Below Burnside the general characteristics and the fall of the river are uniform, there being on one side of the stream a high rocky hill and on the other side a low flat several hundred feet in width. These flats are very fertile and alternate from one side of the river to the other; at no point in the entire distance do the hills on the opposite sides extend down to the river channel.

Above Burnside the principal fall of the river is concentrated at Cumberland Falls and Smith Shoals. The total fall at these points is about 65 and 55 feet respectively. Below Burnside the slope of the river is nearly constant, being an average of about two-thirds of a foot to the mile in the 328 miles between Burnside and Nashville. No railroads parallel or cross the river between Nashville and Burnside.

The bulk of Kentucky's potential water power, except for the Ohio, is located on Cumberland River and its tributaries. Several applications are now pending with the Federal Power Commission for developments on the upper Cumberland and prospects are that work will be commenced on one or more of these projects in the near future. As is the case on all streams in this state, commercial power can not be developed economically without the aid of storage. The character of the river valley above Cumberland Falls is such as to afford excellent storage facilities and these will be made full use of in the developments now planned. A dam 87 feet high located at the top of Cumberland falls will create a pool extending to Williamsburg and will be used primarily as a storage reservoir. The Falls in themselves have a sheer drop of 68 feet at low water, making a total head of 155 feet available at this point when the reservoir is full. A second dam about 155 feet high is to be constructed at the foot of Smith Shoals, 2 miles above Burnside, which will back water to the foot of Cumberland Falls and a third dam of about the same height is proposed for the South Fork of Cumberland River at a point 2 miles above its junction with the main stream. Preliminary plans call for the installation of machinery to develop 45,000 horsepower at Dam No. 1, 75,000 horsepower at

Dam No. 2 and 30,000 horsepower at Dam No. 3, making a total installed capacity of about 150,000 horsepower. Stream flow records collected since 1915 by the U. S. Geological Survey cooperating with the State Geologist of Kentucky have been a determining factor in bringing about these developments.

Investigations are now being made by the U. S. Army Engineers with a view to erecting high dams on Cumberland River between Burnside and Celina, Tennessee, in order to combine water power development with navigation on all future improvements. It is possible that such a project may be entirely feasible after the large storage developments are completed on the head waters.

The river below Nashville resembles that stretch above Nashville, the principal difference being in the wider flood plain and the lower hills bordering the river. The fall below Nashville is less than half a foot to the mile.

The principal tributaries of Cumberland River are Laurel, Rockcastle, Obey, Stones, Harpeth, and Red rivers, and South and Caney Forks. These all resemble the main river in general characteristics except that they have much higher gradient.

The river basin is rich in coal and lumber, and the outlet for these and for other products of the basin is the river itself. The head of navigation is considered to be at Burnside where the South Fork enters the main stream. The river from Burnside to the mouth is navigable about 8 months of the year, but during the remaining months, the depth of the water over the shoals is insufficient to permit any except very light craft to pass. The United States Engineer Corps is now at work on a project that will provide slack-water navigation with a minimum depth of 6 feet throughout this stretch of the river. The project proposes 27 dams, of which 10 are practically completed, and work is now in progress on several others.

River gages have been maintained by the United States Weather Bureau at the following points along the river: Williamsburg, Burnside, Celina, Carthage, Nashville, Lock A, Clarksville, and Lock D. Daily readings have been obtained at these points for several years and are published annually by the United States Weather Bureau. Discharge records are available at Cumberland Falls, Burnside, and Nashville and on the South

Fork at Nevelsville, Ky., as well as on several other tributaries in Tennessee.

Tennessee River.

Tennessee River is the largest stream flowing through the State; comprising as it does a drainage area of 40,700 square miles of which only about 1,000 square miles lies in Kentucky. It enters Kentucky from the South near the western end of the state, where it forms the boundary line between Kentucky and Tennessee for a distance of about 12 miles and continues in a northerly direction forming the boundary between Calloway, Trigg, Marshall, Lyon, Livingston, and McCracken counties to its junction with the Ohio at Paducah. It is not only the largest stream in Kentucky but it is likewise the largest tributary of the Ohio River. Its absolute minimum flow is estimated at about 10,000 second-feet. At one point in its course, namely, at Grand Rivers, the Tennessee is less than 2 miles from Cumberland River. A line of levels run during the low-water season of 1922 shows the water level in the two rivers to be at almost exactly the same elevation at this point.

Tennessee River in Kentucky is navigable throughout the year. The following discharge measurements were made at Birmingham, Ky., in 1903 by the Mississippi River Commission:

Discharge measurements of Tennessee River at Birmingham, Ky., in 1903.

Date	Gage Height	Discharge	Date	Gage Height	Discharge
	Feet	Sec.-ft.		Feet	Sec.-ft.
Sept. 5	0.92	14,100	Sept. 10		12,800
Sept. 5		13,000	Sept. 11	.68	11,900
Sept. 5	.92	14,200	Sept. 11		12,100
Sept. 6	.90	13,300	Sept. 11	.68	11,800
Sept. 6	.90	14,000	Sept. 11		12,300
Sept. 6		13,000	Eept. 12	.62	12,900
Sept. 7	.90	13,600	Sept. 12		13,700
Sept. 7		13,700	Sept. 12	.62	12,800
Sept. 7		13,400	Sept. 12		13,300
Sept. 7		13,200	Sept. 14	.51	11,900
Sept. 7	.90	13,400	Sept. 14		12,400
Sept. 7		13,800	Sept. 14	.51	11,600
Sept. 8	.86	13,200	Sept. 14		12,100
Sept. 8		13,300	Sept. 15	.49	11,600
Sept. 8	.86	13,400	Sept. 15		12,400
Sept. 8		13,900	Sept. 16	.48	10,600
Sept. 9	.80	12,500	Sept. 16		11,400
Sept. 9		12,900	Sept. 18	.34	10,400
Sept. 9	.80	12,700	Sept. 18	.34	10,300
Sept. 9		13,200	Sept. 19	.35	10,800
Sent. 10	.71	12.500			

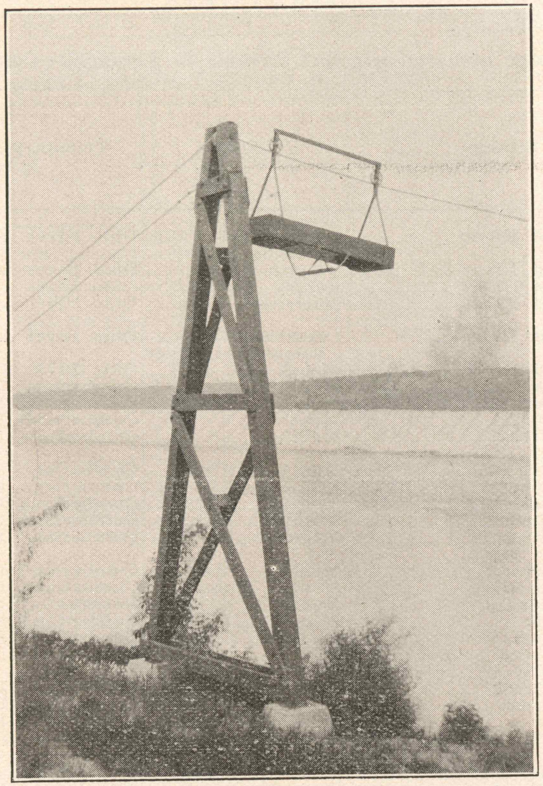
Drainage Areas of Principal Streams in Kentucky.

Stream	Point	Tributary to	Drainage Area. Sq. Miles
Big Sandy	Louisa	Ohio River	3,640
Big Sandy	Mouth	Ohio River	4,260
Tug Fork	Mouth	Big Sandy River	1,380
Wolf Creek	Mouth	Tug Fork	83
Rockcastle Creek	Mouth	Tug Fork	120
Levisa Fork	Pikeville	Big Sandy River	....
Levisa Fork	Paintsville	Big Sandy River	2,080
Levisa Fork	Mouth	Big Sandy River	2,260
Russell Fork	Mouth	Levisa Fork	660
Shelby Creek	Mouth	Levisa Fork	115
Beaver Creek	Mouth	Levisa Fork	250
Johns Creek	Mouth	Levisa Fork	220
Paint Creek	Mouth	Levisa Fork	180
Blaine Creek	Mouth	Big Sandy River	266
Little Sandy River	Mouth	Ohio River	724
Little Fork	Mouth	Little Sandy	123
East Fork	Mouth	Little Sandy	156
Tygarts Creek	Mouth	Ohio River	350
Kinniconick Creek	Mouth	Ohio River	212
Licking River	Farmers	Ohio River	768
Licking River	Falmouth	Ohio River	3,240
Licking River	Mouth	Ohio River	3,730
Beaver Creek	Mouth	Licking River	94
Triple Creek	Mouth	Licking River	217
Slate Creek	Mouth	Licking River	237
Fox Creek	Mouth	Licking River	101
Fleming Creek	Mouth	Licking River	84
Johnson Creek	Mouth	Licking River	104
North Fork	Mouth	Licking River	275
South Fork	Mouth	Licking River	945
Stoner Creek	Mouth	S. Fk. Licking R.	289
Hunkson Creek	Mouth	S. Fk. Licking R.	285
Grassy Creek	Mouth	Licking River	128
Mud Lick Creek	Mouth	Ohio River	97
Kentucky River	Beattyville	Ohio River	2,660
Kentucky River	Below Red River	Ohio River	3,760
Kentucky River	High Bridge	Ohio River	5,040
Kentucky River	Mouth	Ohio River	6,980
North Fork of Ky. River	Hazard	Kentucky River	478
North Fork of Ky. River	Troublesome Creek	Kentucky River	900
North Fork of Ky. River	Mouth	Kentucky River	1,330
Car Fork	Mouth	N. Fk. of Ky. R.	86
Troublesome Creek	Mouth	N. Fk. of Ky. R.	250
Quicksand Creek	Mouth	N. Fk. of Ky. R.	206
Middle Fork of Ky. River	Hyden	Kentucky River	218
Middle Fork of Ky. River	Mouth	Kentucky River	548
Cutshin Creek	Mouth	Mid. Fk. Ky. R.	95
South Fork of Ky. River	Oneida	Kentucky River	463
South Fork of Ky. River	Mouth	Kentucky River	767
Goose Creek	Mouth	S. Fk. of Ky. R.	246
Bedbird Creek	Mouth	S. Fk. of Ky. R.	217
Sturgeon Creek	Mouth	Kentucky River	117
Station Camp Creek	Mouth	Kentucky River	215
Red River	Mouth	Kentucky River	491
Silver Creek	Mouth	Kentucky River	130

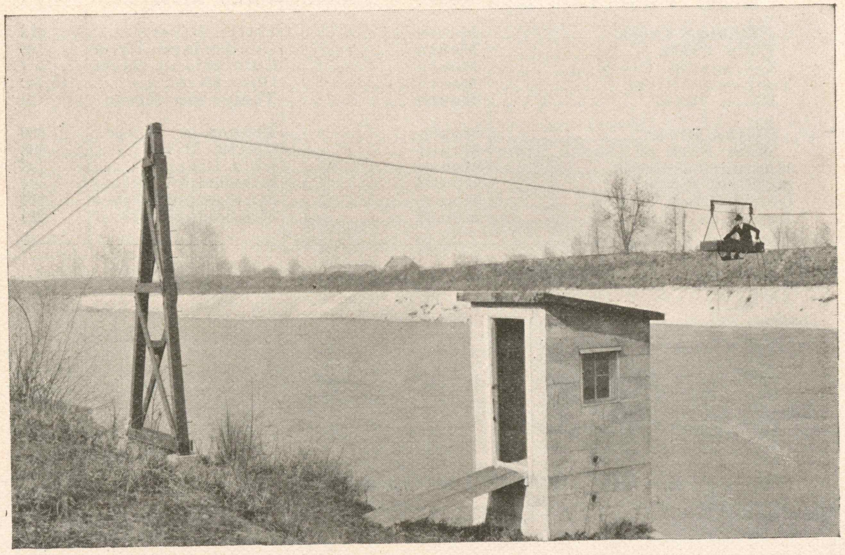
Drainage areas of principal streams in Kentucky—Continued.

Stream	Point	Tributary to	Drainage Area. Sq. Miles
Paint Lick Creek	Mouth	Kentucky River	114
Hickman Creek	Mouth	Kentucky River	97
Dix River	Mouth	Kentucky River	415
Elkhorn Creek	Mouth	Kentucky River	467
N. Fork of Elkhorn Ck.	Mouth	Elkhorn Creek	291
Eagle Creek	Mouth	Kentucky River	495
Little Kentucky River	Mouth	Ohio River	120
Harrods Creek	Mouth	Ohio River	104
Pond Creek	Mouth	Ohio River	110
Salt River	Mouth	Ohio River	2,890
Clear Creek	Mouth	Salt River	254
Floyds Fork	Mouth	Salt River	262
Rolling Fork	Mouth	Salt River	1,470
Beech Fork	Mouth	Rolling Fork	776
Little Beech Creek	Mouth	Beech Fork	154
Sinking Creek	Mouth	Ohio River	197
Blackford Creek	Mouth	Ohio River	101
Green River	Munfordville	Ohio River	1,790
Green River	Woodbury	Ohio River	5,400
Green River	Mouth	Ohio River	9,430
Casey Creek	Mouth	Green River	103
Robinson Creek	Mouth	Green River	113
Russell Creek	Mouth	Green River	279
Pitman Creek	Mouth	Green River	154
Brush Creek	Mouth	Green River	98
Little Barren River	Mouth	Green River	346
Nolin River	Mouth	Green River	713
Bacon Creek	Mouth	Nolin River	101
Bear Creek	Mouth	Green River	179
Barren River	Mouth	Green River	2,220
Lime Creek	Mouth	Barren River	149
Beaver Creek	Mouth	Barren River	346
Skegg Creek	Mouth	Beaver Creek	198
Bays Fork	Mouth	Barren River	106
Drake Creek	Mouth	Barren River	538
Trammel Fork	Mouth	Drake Creek	128
West Fork	Mouth	Drake Creek	169
Gasper Creek	Mouth	Barren River	232
Mud Creek	Mouth	Green River	108
Mud River	Mouth	Green River	425
Enterprise Creek	Mouth	Mud River	165
Pond Creek	Mouth	Green River	123
Rough River	Mouth	Green River	1,030
North Fork	Mouth	Rough River	142
Pond River	Mouth	Green River	718
Deer Creek	Mouth	Green River	135
Panther Creek	Mouth	Green River	347
Canoe Creek	Mouth	Ohio River	103
Highland Creek	Mouth	Ohio River	217
Tradewater River	Mouth	Ohio River	1,050
Clear Creek	Mouth	Tradewater River	208
Crab Orchard Creek	Mouth	Tradewater River	170
Cumberland River	Mouth of Poor Fk.	Ohio River	382
Cumberland River	Pineville	Ohio River	694
Cumberland River	Williamsburg	Ohio River	1,640
Cumberland River	Cumberland Falls	Ohio River	2,040
Cumberland River	Burnside below South Fork	Ohio River	4,890
Cumberland River	Celina, Tenn.	Ohio River	7,160
Cumberland River	Nashville, Tenn.	Ohio River	12,860
Cumberland River	Clarksville, Tenn. below Red River	Ohio River	15,980
Cumberland River	Mouth	Ohio River	17,860
Poor Fork	Mouth	Cumberland River	149
Clover Fork	Mouth	Cumberland River	108
Martin Fork	Mouth	Cumberland River	124
Yellow Creek	Mouth	Cumberland River	105
Straight Creek	Mouth	Cumberland River	93
Stinking Creek	Mouth	Cumberland River	97
Clear Creek	Mouth	Cumberland River	370
Jellico Creek	Mouth	Cumberland River	126
Marsh Creek	Mouth	Cumberland River	83
Laurel River	Mouth	Cumberland River	282
Rockcastle River	Mouth	Cumberland River	767
Roundstone Creek	Mouth	Rockcastle River	142
Buck Creek	Mouth	Cumberland River	270
Sou. Fk. of Cumberland R.	Mouth	Cumberland River	1,370
Little South Fork	Mouth	S.Fk.Cumberl'd R.	120
Fishing Creek	Mouth	Cumberland River	156
Beaver Creek	Mouth	Cumberland River	203
Red River	State line	Cumberland River	512
South Fork of Red River	Mouth	Red River	149
Whipporwill Creek	Mouth	Red River	98
Elk Fork	State line	Red River	90
West Fork of Red River	State line	Red River	156
Little River	Mouth	Cumberland River	582
Muddy Fork	Mouth	Little River	114
Sinking Creek	Mouth	Little River	113
Eddy Creek	Mouth	Cumberland River	100
Livingston Creek	Mouth	Cumberland River	117
Tennessee River	Mouth	Ohio River	40,740
Blood River	Mouth	Tennessee River	125
Clarks River	Mouth	Tennessee River	530
West Fork of Clarks River	Mouth	Clarks River	143
Humphries Creek	Mouth	Ohio River	102
Mayfield Creek	Mouth	Mississippi River	424
Obion Creek	Mouth	Mississippi River	324
Bayou de Chien	Mouth	Mississippi River	239

Drainage areas of principal streams in Kentucky—Continued.



A Frame and Cable Car



Automatic Gage House and Measuring Cable.

CHAPTER IV.

BIG SANDY RIVER BASIN RECORDS.

LEVISA FORK AT THELMA, KY.

Location.—At Chesapeake & Ohio Railway bridge at Thelma, Johnson County, 2 miles below Paintsville. Buffalo Creek enters on right about half a mile above station.

Drainage Area.—2,090 square miles (measured by United States Engineer Corps).

Records Available.—June 1, 1915, to September 30, 1920.

Gage.—Vertical staff gage attached to right shore pier of bridge, portion of gage above 24 feet is cut in masonary steps on upper end of right abutment; read by John Stambaugh. Sea level elevation of gage, 561.82 feet (United States Engineer Corps).

Discharge Measurements.—Made from boardwalk constructed on the lower downstream chord of bridge.

Channel and Control.—Channel straight one-half mile above and 300 feet below gage. Bed of stream sandy. Remains of coffer dams around piers, and piles at measuring section. Primary control about 2,400 feet downstream composed of rock which extends three-fourths of the way across stream; remainder is firm sand, fairly permanent.

Extremes of Stage.—1915-1920: Maximum stage recorded 40.7 feet at 6 p. m. January 29, 1918 (estimated discharge 65,000 second-feet; minimum stage 1.30 feet August 25, 26 and October 16-22, 1918. Highest stage known at this site 42.6 feet, date unknown.

Ice.—Stage discharge relation probably not affected by ice.

Regulation.—Splash dams on tributaries and in main stream about 50 miles above used by timber companies may affect low-water flow to some extent.

Accuracy.—Discharge measurements made in 1917 apparently indicate a marked change in stage-discharge relation; no discharge measurements made since 1917; additional measurements are needed for confirmation before preparing estimates

of discharge after 1916. Gage read twice daily to hundredths below 10 feet and to tenths above 10 feet. Records good.

COOPERATION.—Base data furnished by United States Engineer Corps.

Discharge measurements of Levisa Fork at Thelma, Ky., during the period 1915-1917.

Date	Made by—	Gage height	Discharge	Date	Made by—	Gage height	Discharge
		Ft.	Sec.-ft.			Ft.	Sec.-ft.
1915				1916			
Dec. 30	F. C. Sammons	23.95	31,800	Apr. 10	H. E. Frye	12.95	11,600
30	F. C. Sammons	23.35	30,700	11	H. E. Frye	11.33	9,160
30	F. C. Sammons	22.90	29,200	11	H. E. Frye	10.85	8,720
31	Frye & Sammons	16.0	14,800	25	H. E. Frye	4.20	1,530
31	Frye & Sammons	14.35	12,700	Dec. 29	F. C. Sammons	20.25	24,400
				29	F. C. Sammons	20.40	22,100
1916							
Jan. 4	Frye & Sammons	9.35	6,390	1917			
5	Frye & Sammons	8.20	4,930	Jan. 6	F. C. Sammons	29.70	41,800
5	Frye & Sammons	7.95	4,860	6	F. C. Sammons	27.60	45,700
6	Frye & Sammons	7.4	4,400	7	F. C. Sammons	20.30	20,100
6	Frye & Sammons	7.4	4,310	7	F. C. Sammons	28.50	37,500
10	Frye & Sammons	10.95	8,780	Feb. 25	H. E. Frye	21.00	21,500
10	Frye & Sammons	10.95	8,950	Mar. 3	H. E. Frye	27.10	35,300
12	Frye & Sammons	16.35	17,400	3	H. E. Frye	28.05	38,300
12	Frye & Sammons	16.10	16,300	3	H. E. Frye	29.20	41,300
13	Frye & Sammons	17.10	18,600	3	H. E. Frye	29.10	44,400
29	Frye & Sammons	5.70	3,030	4	H. E. Frye	32.25	44,000
Feb. 1	Frye & Sammons	9.10	7,050	4	H. E. Frye	31.70	45,300
Mar. 8	Frye & Sammons	14.15	13,900	5	H. E. Frye	34.05	51,200
8	Frye & Sammons	15.15	15,000	5	H. E. Frye	22.90	23,300
9	Frye & Sammons	14.05	13,000	5	H. E. Frye	34.10	54,200
9	Frye & Sammons	13.15	11,500	6	H. E. Frye	25.70	26,500
9	Frye & Sammons	12.55	10,600	6	H. E. Frye	21.65	19,900
22	Frye & Sammons	5.2	2,050	20	Frye & Sammons	10.6	7,310
Apr. 10	H. E. Frye	13.20	12,100				

Daily gage height, in feet, of Levisa Fork at Thelma, Ky., for the years ending September 30, 1915-1920.

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1915					1915				
1	6.75	2.9	2.8	3.3	17	5.40	3.95	3.05	1.65
2	7.40	4.7	2.3	2.9	18	5.10	3.80	6.65	1.55
3	7.55	3.7	2.05	2.65	19	4.30	3.50	5.80	2.05
4	6.15	3.85	3.10	2.50	20	3.85	3.40	4.75	1.95
5	5.10	5.30	2.85	2.50	21	3.40	4.90	3.55	2.50
6	5.3	4.65	2.60	2.70	22	3.05	6.10	3.10	2.80
7	3.65	3.65	2.35	2.95	23	2.75	6.05	2.65	2.55
8	3.30	4.80	2.15	3.40	24	2.50	4.50	2.55	2.40
9	3.65	4.15	2.00	3.10	25	2.25	3.70	2.35	2.50
10	3.15	3.20	1.95	2.95	26	2.15	3.15	2.00	2.25
11	3.45	3.40	2.15	2.55	27	2.05	2.85	1.75	2.15
12	3.50	4.35	2.65	2.45	28	1.95	2.45	1.95	2.00
13	3.35	6.9	2.65	2.20	29	1.85	2.30	3.50	1.90
14	3.35	8.15	2.55	2.15	30	2.2	2.05	5.40	1.90
15	4.30	6.40	2.85	2.00	31	......	1.95	4.30	......
16	6.25	4.70	2.75	1.85					

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	10.45	1.8	3.6	10.5	8.75	7.25	10.4	5.7	2.77	2.45	2.06	2.11
2	14.6	1.75	3.6	8.70	13.9	7.95	8.35	5.1	2.8	2.24	1.94	2.3
3	9.25	1.7	3.35	8.1	13.0	10.65	7.35	4.75	2.92	2.05	2.03	2.42
4	6.15	1.7	3.0	9.4	10.25	13.6	6.5	5.0	2.66	1.97	1.92	2.15
5	5.85	1.7	3.0	7.95	9.9	11.5	5.9	4.1	2.47	1.91	1.82	2.00
6	5.4	1.6	3.0	7.4	10.0	9.8	5.3	4.35	2.46	1.81	1.97	1.92
7	4.4	1.6	2.9	8.05	12.05	10.85	5.0	4.15	3.19	1.76	3.62	1.90
8	3.90	1.6	2.65	16.0	12.0	13.85	6.45	4.05	3.11	1.70	2.68	1.9
9	2.85	1.6	2.6	13.5	11.05	13.15	12.5	3.8	4.07	1.70	2.85	2.0
10	2.65	1.6	2.6	11.15	11.7	10.4	13.15	3.55	3.85	1.69	2.9	1.92
11	2.9	1.6	2.6	12.0	11.95	8.5	10.95	3.35	3.65	1.68	3.15	1.75
12	2.75	1.6	2.6	15.8	10.5	6.7	10.15	3.18	3.28	1.70	4.85	1.65
13	2.6	1.7	3.1	16.65	8.9	6.1	9.45	3.06	3.06	1.70	5.55	1.60
14	2.5	1.7	3.55	13.8	7.75	5.5	8.1	2.92	2.85	1.80	4.87	1.61
15	2.4	10.35	4.7	11.85	6.35	5.5	7.0	2.85	2.77	1.90	6.5	1.98
16	2.3	11.50	5.9	9.5	5.05	5.3	6.05	2.76	2.72	1.90	20.2	1.95
17	2.2	8.9	26.3	8.2	5.5	5.2	5.45	2.69	2.95	2.0	15.7	2.42
18	2.25	5.55	29.0	6.8	5.55	4.75	5.0	2.59	2.75	3.15	9.2	2.4
19	2.35	5.45	29.6	6.05	5.25	4.95	4.6	2.51	3.90	3.9	6.4	2.25
20	2.75	5.6	16.5	5.45	5.05	5.00	3.95	2.46	3.38	5.0	5.51	2.06
21	2.35	6.45	10.05	5.45	4.7	4.95	3.8	2.4	2.96	6.45	4.4	1.92
22	2.35	5.55	7.7	5.8	4.45	4.95	4.15	2.33	2.68	5.02	3.72	1.82
23	2.4	5.1	6.6	8.9	4.3	5.2	3.95	2.35	2.47	4.66	3.32	1.74
24	2.4	4.25	5.45	11.85	4.45	5.1	3.75	2.36	2.45	5.55	3.03	1.7
25	2.25	3.85	5.25	9.8	8.4	4.75	4.1	2.39	2.43	3.65	2.96	1.57
26	2.2	3.7	7.85	8.15	14.4	4.55	4.25	2.47	3.97	3.0	3.15	1.5
27	2.15	4.8	7.6	6.8	11.6	6.3	4.7	2.50	4.70	2.62	2.93	1.45
28	2.1	3.75	8.35	6.1	9.55	18.9	5.7	2.57	3.81	2.42	2.65	1.45
29	2.15	3.7	16.85	5.7	8.05	23.6	6.6	2.25	3.12	2.4	2.45	1.61
30	1.9	3.55	23.1	5.9	......	17.0	6.25	2.65	2.68	2.4	2.32	1.62
31	1.9	......	14.75	5.65	......	12.35	......	2.61	......	2.27	2.21	......

Daily gage height, in feet, of Levisa Fork at Thelma, Ky.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
1	1.65	2.10	2.57	6.30	9.30	13.50	6.55	4.37	3.55	3.30	2.67	4.10
2	1.69	2.10	2.60	5.45	15.25	23.60	6.30	5.02	5.50	2.80	2.55	6.15
3	1.99	2.05	2.70	5.75	11.50	28.60	6.40	5.10	6.13	2.47	2.62	4.80
4	1.97	2.00	2.77	12.65	7.75	32.20	5.90	4.65	5.25	2.65	3.17	3.30
5	1.85	1.98	3.00	27.90	6.90	33.85	5.75	4.25	3.98	3.40	2.95	2.92
6	1.72	1.95	3.10	28.05	5.77	23.25	10.55	4.10	3.55	3.42	2.75	2.57
7	1.64	1.90	2.90	18.65	5.47	15.65	13.05	4.00	3.68	2.92	2.37	2.85
8	1.57	1.85	2.82	11.70	5.45	16.60	10.95	3.78	3.33	2.27	2.42	3.85
9	1.50	1.80	2.87	8.55	5.17	13.95	9.20	3.78	3.45	2.10	3.35	4.95
10	1.65	1.87	2.67	6.85	5.40	11.25	8.00	4.15	3.35	2.65	3.62	4.75
11	1.56	1.95	2.67	5.90	7.07	9.30	6.45	4.90	3.57	2.60	3.80	4.17
12	1.51	1.95	2.70	5.10	6.80	11.50	5.65	4.95	3.75	2.25	3.15	3.50
13	1.51	1.97	2.70	4.55	5.85	18.75	5.35	4.85	3.50	2.12	2.67	3.05
14	1.50	2.25	2.50	4.60	5.80	16.25	5.23	4.58	3.38	2.05	2.50	2.75
15	1.50	2.32	2.30	5.25	6.45	13.30	5.10	4.25	3.10	2.10	2.30	2.47
16	1.50	2.27	2.50	6.80	9.07	10.97	4.83	3.90	2.85	2.37	2.25	2.32
17	1.62	2.20	2.50	6.50	7.95	14.30	4.55	3.65	2.60	2.45	2.22	2.15
18	2.55	2.20	2.77	5.72	7.40	18.70	4.33	3.45	2.50	3.05	2.12	2.06
19	5.15	2.20	2.45	5.50	7.05	13.60	4.05	3.25	2.53	3.45	1.97	2.00
20	6.30	2.20	2.40	5.90	11.75	10.45	3.93	3.05	3.65	3.52	1.90	1.87
21	6.45	2.15	3.25	6.67	22.25	9.50	3.83	2.93	2.63	3.67	1.77	1.81
22	4.70	2.10	6.30	16.00	15.50	9.90	3.68	2.80	2.38	2.65	1.75	1.82
23	3.89	2.05	9.55	14.40	11.20	10.15	3.55	2.95	2.30	3.20	2.15	1.72
24	3.35	2.12	9.05	11.77	17.90	20.30	3.43	3.03	2.30	4.47	3.05	1.65
25	3.00	2.15	6.10	9.05	20.50	23.95	3.28	2.93	2.45	5.90	3.05	1.60
26	2.75	2.15	4.92	7.25	14.80	15.45	3.25	2.83	2.43	5.85	2.85	1.60
27	2.52	2.15	4.35	6.00	10.75	11.20	3.13	3.75	2.30	5.37	2.62	1.65
28	2.37	2.17	8.95	5.52	11.75	10.50	3.23	9.45	2.45	4.57	2.27	4.62
29	2.27	2.40	19.70	5.17	......	10.25	3.48	6.60	2.30	4.27	2.07	6.20
30	2.20	2.47	13.75	5.85	......	9.07	3.95	4.80	3.58	3.35	2.00	5.50
31	2.17	......	8.50	7.17	......	7.75	......	4.08	......	3.05	2.30	......
1917-18												
1	4.05	4.05	2.25	4.50	16.50	5.40	5.00	5.45	4.10	5.3	5.9	3.9
2	3.00	4.15	2.30	4.28	11.70	5.08	4.62	5.05	3.9	5.0	4.8	4.0
3	2.88	3.75	2.45	4.55	8.50	4.90	4.45	4.68	3.5	4.2	3.5	3.5
4	2.65	3.40	2.80	4.65	7.65	4.60	5.75	4.22	3.2	4.0	3.0	3.1
5	2.48	3.12	2.80	4.52	6.00	8.55	6.95	4.00	2.8	3.5	2.6	3.0
6	2.30	2.95	2.70	4.12	5.55	10.15	6.48	3.92	2.8	3.0	2.4	3.2
7	2.18	2.78	2.62	6.05	5.65	12.98	6.10	3.68	2.8	2.35	2.1	3.2
8	2.08	2.65	2.62	9.55	5.85	17.25	12.70	3.52	3.0	2.5	2.0	4.1
9	2.02	2.55	2.72	9.45	6.70	12.88	21.75	3.50	2.9	2.5	2.0	3.5
10	2.00	2.48	2.75	7.70	7.75	9.75	17.80	3.42	2.7	2.4	1.9	3.2
11	1.92	2.40	2.80	5.75	7.75	8.85	11.55	3.55	2.6	2.3	1.9	3.3
12	1.98	2.40	2.80	5.60	7.60	8.30	10.15	3.88	2.4	2.3	2.0	3.0
13	2.20	2.35	2.80	5.68	6.55	7.88	8.55	4.95	2.3	2.2	2.0	2.8
14	2.20	2.30	2.80	7.80	6.55	8.05	7.30	8.40	2.3	2.1	2.0	2.4
15	2.12	2.28	2.85	7.30	5.50	8.62	6.48	8.90	2.0	2.0	2.1	2.4
16	2.05	2.20	2.90	7.90	5.05	7.90	5.85	8.25	1.9	1.9	2.0	2.4
17	2.05	2.12	2.90	8.10	4.95	6.55	5.58	5.70	1.75	1.8	1.9	2.3
18	2.00	2.10	2.90	7.95	4.65	6.00	5.35	4.80	2.7	1.7	1.8	2.2
19	5.38	2.10	2.90	6.78	4.48	5.30	5.30	5.10	6.3	1.7	1.7	2.2
20	8.50	2.10	2.55	5.60	10.85	4.95	5.30	5.58	3.0	2.8	1.65	2.1
21	5.75	2.05	2.45	5.08	12.00	5.10	5.75	8.50	2.5	3.0	1.6	2.0
22	4.70	2.00	2.65	4.62	10.40	5.50	8.45	8.45	4.5	2.8	1.4	2.0
23	3.96	2.00	3.02	4.50	8.25	8.70	9.75	7.05	6.0	2.5	1.4	2.2
24	3.70	2.00	3.25	4.28	6.98	9.25	7.95	8.78	5.5	2.6	1.35	2.2
25	3.50	2.00	3.70	4.28	6.20	12.15	6.80	7.45	5.0	2.3	1.3	2.1
26	3.30	1.95	4.52	4.38	6.12	13.45	6.05	6.25	12.6	2.5	1.3	2.1
27	3.15	1.95	4.98	7.65	5.90	11.50	6.15	5.85	13.0	2.2	1.35	2.1
28	3.08	2.02	5.25	29.00	5.68	8.60	6.45	5.05	8.3	2.5	1.35	2.0
29	2.98	2.18	4.10	40.60	......	7.15	6.42	4.65	6.0	2.6	2.1	1.9
30	3.80	2.20	3.58	28.35	......	6.10	6.10	3.95	5.9	3.6	2.1	1.9
31	4.55	......	4.08	22.00	......	5.40	......	4.22	......	4.0	2.3	......

Daily gage height, in feet, of Levisa Fork at Thelma, Ky.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1918-19												
1	1.9	13.0	2.5	16.4	4.4	8.5	7.8	5.6	6.2	5.2	3.4	2.8
2	1.9	10.0	2.5	28.1	4.1	7.1	7.6	6.1	5.4	5.1	3.2	2.7
3	1.8	5.0	2.6	29.2	3.8	6.2	6.4	6.6	3.9	5.0	3.2	2.6
4	1.8	4.0	2.5	14.5	3.5	4.7	5.9	6.8	3.3	4.9	3.4	2.6
5	1.7	3.5	2.4	10.5	3.7	4.5	5.6	6.9	3.1	4.6	3.6	2.5
6	1.7	3.4	2.3	10.1	3.6	4.8	5.2	6.2	2.7	4.3	3.1	2.5
7	1.7	3.2	2.3	9.2	3.5	10.9	4.7	5.5	2.6	3.8	2.9	2.5
8	1.6	2.9	2.4	8.5	3.4	9.5	4.4	5.8	2.4	3.1	2.8	2.4
9	1.6	2.8	2.5	8.5	3.3	9.9	4.2	5.9	2.3	3.9	2.8	2.4
10	1.5	2.7	2.5	8.3	3.3	8.2	3.9	7.3	3.0	4.9	2.7	2.9
11	1.5	2.3	2.5	7.5	3.2	6.3	3.8	7.6	3.3	5.6	2.6	2.8
12	1.5	2.2	3.2	5.8	3.1	6.1	4.5	7.4	3.6	5.8	2.6	2.8
13	1.5	2.1	4.9	5.5	3.1	5.5	8.7	7.2	3.4	4.4	2.4	2.7
14	1.4	2.0	4.7	5.2	3.6	4.3	8.4	5.8	3.1	4.1	2.4	2.6
15	1.4	1.9	15.5	5.2	3.9	4.2	8.1	5.4	2.8	3.8	2.6	2.6
16	1.3	1.9	16.1	5.6	4.2	4.1	7.9	5.1	2.6	3.1	3.8	2.3
17	1.3	1.9	8.5	5.8	3.9	4.8	7.7	4.8	2.4	5.5	3.8	2.3
18	1.3	2.0	7.5	7.3	3.7	5.1	7.4	4.2	2.6	7.4	3.7	3.4
19	1.3	2.1	6.8	12.8	3.6	5.0	7.1	4.1	2.8	6.4	3.6	3.6
20	1.3	2.0	4.7	11.7	3.5	4.9	6.8	7.6	3.0	4.4	3.9	3.6
21	1.3	2.0	4.2	8.7	3.7	4.6	6.4	9.5	3.3	3.6	3.6	3.7
22	1.3	2.0	3.7	7.9	3.8	4.2	6.1	10.4	3.6	3.0	3.5	3.6
23	3.1	2.0	6.7	7.9	4.8	3.6	5.9	12.6	3.7	2.9	3.4	3.8
24	2.5	2.0	6.8	11.9	6.4	3.4	5.8	9.1	4.3	2.8	3.3	3.8
25	2.5	1.9	5.2	10.3	7.3	3.8	5.6	7.5	5.4	2.8	3.3	3.8
26	2.4	1.9	5.9	9.6	8.5	3.6	5.5	7.9	5.9	2.7	3.2	3.7
27	2.4	2.0	5.1	8.9	12.5	5.1	5.9	Int.	6.2	2.6	3.0	3.7
28	2.45	2.0	3.8	7.7	10.7	22.1	6.2	7.8	5.8	2.6	3.4	3.5
29	2.5	2.2	3.6	5.5	......	14.9	6.1	7.4	5.1	2.6	3.2	3.2
30	3.5	2.5	3.5	4.8	......	11.8	5.8	7.1	4.6	2.8	3.1	3.1
31	15.4	......	4.3	4.7	......	7.8	......	6.6	......	3.2	3.0	......
1919-20												
1	3.1	14.5	4.8	3.4	5.3	7.2	6.1	5.4	3.3	5.4	3.2	3.3
2	3.0	24.8	4.4	3.3	4.9	6.3	12.3	5.2	3.3	4.6	2.9	3.2
3	2.9	18.0	3.8	3.4	4.5	5.4	18.3	5.1	3.4	4.4	2.7	3.1
4	2.9	10.7	3.5	3.6	11.3	4.9	24.3	4.9	3.6	5.6	2.6	3.3
5	2.8	8.5	4.1	4.0	10.1	4.6	19.2	4.8	4.4	6.7	2.6	3.4
6	2.8	7.4	12.5	4.2	9.5	4.8	14.7	4.6	7.6	5.6	2.6	3.2
7	2.7	4.3	24.7	4.1	7.3	5.3	12.3	4.7	8.3	4.4	3.2	3.2
8	2.6	3.4	18.5	5.6	6.4	7.4	11.8	5.6	6.3	4.3	3.9	3.3
9	2.8	3.3	14.1	7.3	8.4	8.8	10.2	7.0	5.2	4.3	3.9	3.4
10	2.9	3.2	9.8	6.2	8.3	9.1	9.1	6.6	7.4	4.8	4.3	3.5
11	3.2	3.3	7.0	5.9	8.0	8.4	8.9	6.4	5.1	4.2	4.4	3.7
12	5.7	3.2	5.9	4.9	7.7	7.3	9.9	5.2	4.9	4.1	4.3	4.8
13	4.6	3.3	7.5	5.3	6.6	9.9	9.4	5.3	3.9	3.9	4.2	11.4
14	5.2	3.6	20.1	5.1	5.8	24.0	9.2	6.4	3.6	3.8	4.3	7.3
15	6.2	3.4	15.7	5.1	5.2	18.2	8.8	6.2	3.2	3.7	4.9	6.9
16	10.8	3.8	11.3	4.8	4.6	11.8	7.1	6.0	3.3	3.7	5.9	6.4
17	9.7	3.6	9.1	4.7	3.3	14.4	6.8	5.5	3.8	3.6	5.4	5.6
18	8.6	3.5	7.3	4.6	3.4	18.2	6.3	4.8	3.7	3.4	5.3	4.6
19	5.5	3.5	6.8	4.3	4.2	25.8	6.0	4.2	3.5	4.3	5.1	3.9
20	5.6	3.4	6.1	4.8	4.2	19.4	6.8	4.2	3.4	5.6	4.3	3.9
21	4.5	3.3	5.9	11.8	4.4	14.3	6.9	3.9	3.6	4.3	4.2	3.7
22	3.2	3.2	5.7	28.3	4.8	11.1	6.6	4.6	3.7	3.4	4.5	3.4
23	3.1	2.9	5.3	34.5	6.9	9.8	6.0	4.7	3.8	4.5	4.4	3.1
24	3.5	3.2	5.0	34.1	8.3	7.3	5.7	4.8	4.6	5.6	4.3	3.0
25	3.7	5.8	4.3	26.0	10.4	5.2	5.5	5.8	3.9	4.3	4.2	2.9
26	9.8	8.4	3.9	22.3	11.3	4.9	6.7	5.9	3.8	5.4	3.8	2.8
27	5.4	8.8	3.8	19.5	9.8	4.7	7.3	5.7	3.7	6.7	3.6	2.8
28	4.5	8.9	3.7	11.2	8.9	4.5	7.0	5.5	3.5	5.6	3.6	2.7
29	5.7	7.8	3.6	7.8	8.8	4.4	6.3	5.3	3.4	3.4	3.7	2.9
30	4.5	6.4	3.5	6.7	......	4.1	5.9	5.9	3.3	3.4	3.6	2.9
31	3.5	......	3.5	5.6	......	3.8	......	3.6	......	3.3	3.4	......

Daily discharge in second-feet, of Levisa Fork at Thelma, Ky., for the years ending September 30, 1915-1916.

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1915					1915				
1	3,740	700	645	930	17	2,480	1,400	755	175
2	4,320	1,900	410	700	18	2,220	1,260	3,560	150
3	4,520	1,190	310	570	19	1,610	1,060	2,840	310
4	3,200	1,260	810	495	20	1,260	995	1,980	272
5	2,220	2,400	672	495	21	995	2,060	1,120	495
6	2,400	1,820	545	595	22	755	3,110	810	645
7	1,120	1,120	430	755	23	620	3,020	570	520
8	930	1,980	350	995	24	495	1,750	520	450
9	1,120	1,540	290	810	25	390	1,190	430	495
10	870	870	272	755	26	350	870	290	390
11	995	995	350	520	27	310	672	205	350
12	1,060	1,680	570	472	28	272	472	272	290
13	995	3,830	570	370	29	238	410	1,060	255
14	995	5,140	520	350	30	370	310	2,480	255
15	1,610	3,380	672	290	31	......	272	1,610	......
16	3,200	1,900	620	238					

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	7,720	220	1,120	7,850	5,800	4,120	7,720	2,750	620	472	310	330
2	14,000	205	1,120	5,690	12,800	4,920	5,360	2,220	645	390	272	410
3	6,240	190	995	5,030	11,500	7,980	4,320	1,980	700	310	310	450
4	3,200	190	755	6,480	7,460	12,400	3,470	2,140	570	272	255	350
5	2,840	190	755	4,920	7,080	9,250	2,930	1,470	472	255	220	290
6	2,480	160	755	4,320	7,200	6,960	2,400	1,680	472	220	272	255
7	1,680	160	700	4,920	10,000	8,260	2,140	1,540	870	205	1,120	255
8	1,330	160	570	16,300	10,000	12,700	3,380	1,400	810	190	595	255
9	672	160	545	12,200	8,540	11,800	10,800	1,260	1,470	190	672	290
10	570	160	545	8,820	9,550	7,720	11,800	1,120	1,260	187	700	255
11	700	160	545	10,000	10,000	5,470	8,540	995	1,120	184	870	205
12	620	160	545	16,000	7,850	3,650	7,460	870	930	190	1,980	175
13	545	190	810	17,400	5,910	3,110	6,480	810	810	190	2,660	160
14	495	190	1,120	12,700	4,720	2,570	5,030	700	672	220	2,060	163
15	450	7,720	1,900	9,700	3,380	2,570	3,920	672	620	255	3,470	290
16	410	9,250	2,930	6,600	2,140	2,400	3,020	620	595	255	24,400	272
17	370	5,910	37,300	5,140	2,570	2,310	2,480	595	755	290	15,800	450
18	390	2,660	43,300	3,740	2,660	1,980	2,140	545	620	870	6,240	450
19	430	2,480	44,700	3,020	2,310	2,140	1,820	495	1,330	1,330	3,380	390
20	620	2,660	17,200	2,480	2,140	2,140	1,400	472	995	2,140	2,570	310
21	430	3,380	7,200	2,480	1,900	2,140	1,260	450	755	3,380	1,680	255
22	430	2,660	4,620	2,840	1,680	2,140	1,540	430	595	2,140	1,190	220
23	450	2,220	3,560	5,910	1,610	2,310	1,400	430	472	1,900	930	205
24	450	1,540	2,480	9,700	1,680	2,220	1,260	430	472	2,660	755	190
25	390	1,260	2,310	6,960	5,360	1,980	1,470	450	472	1,120	755	154
26	370	1,190	4,720	5,140	13,600	1,820	1,540	472	1,400	755	870	140
27	350	1,980	4,520	3,740	9,400	3,290	1,900	495	1,900	545	700	130
28	330	1,260	5,360	3,110	6,720	21,800	2,750	520	1,260	450	570	130
29	350	1,190	17,700	2,750	4,920	31,400	3,560	390	810	450	472	163
30	255	1,120	30,300	2,930	......	18,100	3,200	570	595	450	410	166
31	255	......	14,300	2,660	......	10,600	......	545	......	390	370	......

Monthly discharge of Levisa Fork at Thelma, Ky., for the years ending September 30, 1915 and 1916.

(Drainage area 2,090 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1915					
June	4,520	238	1,520	0.727	0.81
July	5,140	272	1,630	.780	.90
August	3,560	205	856	.409	.47
September	995	150	480	.229	.26
1915-16					
October	14,000	255	1,610	.770	.89
November	9,250	160	1,700	.813	.91
December	44,700	545	8,230	3.94	4.54
January	17,400	2,480	6,820	3.26	3.76
February	13,600	1,610	6,220	2.98	3.21
March	31,400	1,620	6,850	3.28	3.78
April	11,800	1,200	3,880	1.86	2.08
May	2,750	390	952	.456	.53
June	1,900	472	836	.400	.45
July	3,380	184	737	.353	.41
August	24,400	220	2,480	1.19	1.37
September	450	130	259	.124	.14
The year	44,700	130	3,380	1.62	22.07

TUG FORK AT KERMIT, W. VA.

Location.—About 150 feet above United Fuel Gas Co.'s ferry at Kermit, Mingo County. Marrowbone Creek enters on right about 2 miles below gage.

Drainage Area.—1,240 square miles (measured by United States Engineer Corps).

Records Available.—June 1, 1915, to September 30, 1920.

Gage.—Vertical staff gage in three sections attached to trees on right bank of river; 0-20 feet, 160 feet above cable; 20-28 feet, 130 feet below cable; and 38 to 48 feet at cable; read by C. C. Preece. Sea-level elevation of zero of gage, 574.77 feet (United States Engineer Corps).

Discharge Measurements.—Made from car on ferry cable or by wading under cable.

Channel and Control.—Channel straight above and below, bed of stream sandy, control about 150 feet below cable composed of solid rock which extends half way across from left bank and loose rock placed in river for fording, probably permanent.

Extreme of Stage.—1915-1920: Maximum stage recorded 38.8 feet January 29, 1918 (estimated discharge 51,000 second-

feet); minimum stage recorded 1.36 feet October 4, 1920 (estimated discharge 65 second-feet).

ICE.—Stage-discharge relation rarely if ever affected by ice.

ACCURACY.—Stage-discharge relation practically permanent; not affected by ice. Rating curve well defined between 85 and 25,000 second-feet; beyond these limits the curve is an extension. No discharge measurements have been made at this station since 1917 and estimates of discharge since that time are withheld until the rating can be verified. Gage read twice daily to hundredths below 10 feet and to tenths above 10 feet. Daily discharge ascertained by applying mean daily gage heights to rating table. Records excellent.

COOPERATION.—Base data furnished by United States Engineer Corps.

Discharge measurements of Tug Fork at Kermit, W. Va., during the years ending September 30, 1915-1917.

Date	Made by—	Gage Height	Discharge	Date	Made by—	Gage Height	Discharge
		Ft.	Sec.-ft.			Ft.	Sec.-ft.
1915				1916			
May 22	H. E. Frye	2.0	181	Mar. 9	F. C. Sammons	10.95	6,580
June 16	F. C. Sammons	4.95	1,530	9	F. C. Sammons	10.35	5,790
Oct. 30	F. C. Sammons	1.7	98.3	10	F. C. Sammons	8.85	4,260
Nov. 16	F. C. Sammons	7.45	3,320	17	Frye & Sammons	4.61	1,200
Dec. 18	F. C. Sammons	21.75	21,300	18	Frye & Sammons	4.51	1,180
19	F. C. Sammons	17.00	14.400	Apr. 26	Frye & Sammons	4.38	1,070
1916				27	Frye & Sammons	5.06	1,490
Jan. 8	F. C. Sammons	14.9	12,100	June 26	F. C. Sammons	8.65	4,520
9	F. C. Sammons	10.95	6,790	27	F. C. Sammons	6.52	2,580
9	F. C. Sammons	10.55	6,210	27	F. C. Sammons	6.23	2,400
9	F. C. Sammons	10.15	6,210	27	F. C. Sammons	5.78	2,000
10	F. C. Sammons	8.9	4,570	27	F. C. Sammons	5.48	1,810
11	F. C. Sammons	9.45	5,120	28	F. C. Sammons	4.65	1,290
12	F. C. Sammons	13.7	10,600	1917			
12	F. C. Sammons	13.5	9,660	Jan. 22	F. C. Sammons	13.3	9,290
12	F. C. Sammons	12.9	8,910	Feb. 21	Frye & Sammons	16.45	12,100
12	F. C. Sammons	12.4	8,410	25	F. C. Sammons	17.90	15,700
13	F. C. Sammons	12.3	8,150	25	F. C. Sammons	17.35	14,200
13	F. C. Sammons	11.9	7,660	Mar. 3	F. C. Sammons	23.85	25,600
30	F. C. Sammons	5.15	1,610	3	F. C. Sammons	24.95	30,000
Feb. 1	F. C. Sammons	12.0	8,360	3	F. C. Sammons	25.95	29,100
2	F. C. Sammons	12.95	9,390	3	F. C. Sammons	26.55	28,400
2	F. C. Sammons	12.55	8,470	5	F. C. Sammons	30.70	35,800
3	F. C. Sammons	10.95	6,410	5	F. C. Sammons	27.70	27,500
4	F. C. Sammons	9.1	4,520	23	Frye & Sammons	8.10	3,350
Mar. 7	F. C. Sammons	10.1	5,730	24	Frye & Sammons	20.95	19,900
8	F. C. Sammons	14.1	11,300	25	Frye & Sammons	21.85	18,800
8	F. C. Sammons	14.6	11,300	25	Frye & Sammons	20.80	18,200
8	F. C. Sammons	14.45	11,200	May 24	H. E. Frye	3.20	485
9	F. C. Sammons	11.45	7,140	24	H. E. Frye	3.20	477

Daily gage height, in feet, of Tug Fork at Kermit, W. Va., for the years ending September 30, 1915-1920.

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1915					1915				
1	5.50	1.75	1.85	2.05	17	4.40	2.35	2.15	.....
2	6.10	2.30	1.75	1.95	18	3.65	2.25	2.80	.....
3	5.62	2.60	1.75	1.90	19	3.10	2.10	2.90	.....
4	4.83	4.50	2.20	1.95	20	2.75	3.15	2.45	2.35
5	4.07	4.25	2.75	.....	21	2.80	4.55	2.30	2.65
6	3.50	3.70	2.55	.....	22	2.55	4.75	2.15	2.75
7	3.05	3.65	2.10	.....	23	2.25	3.80	1.95	2.25
8	3.02	3.30	1.85	.....	24	2.05	3.10	1.75	2.05
9	3.50	3.05	1.70	.....	25	1.90	2.70	1.65	2.05
10	3.10	2.85	1.70	.....	26	1.85	2.45	1.55	2.20
11	2.72	3.35	1.65	.....	27	1.75	2.35	1.50	1.75
12	3.37	3.00	1.85	.....	28	1.65	2.15	1.75	1.85
13	3.42	3.00	2.15	.....	29	1.60	1.95	2.40	2.00
14	2.97	2.75	2.20	.....	30	1.65	1.95	2.30	2.00
15	4.90	2.90	2.65	.....	31	.....	.95	2.30	.....
16	5.25	2.55	2.80	.....					

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	6.05	1.6	2.95	8.15	10.85	5.85	7.9	5.65	3.46	2.84	2.66	2.19
2	7.7	1.6	2.85	7.8	12.7	7.1	6.8	5.15	3.00	2.6	2.58	2.19
3	5.3	1.5	2.80	7.7	10.55	11.05	6.2	4.85	2.95	2.5	2.45	2.18
4	4.1	1.5	2.70	6.95	9.25	12.25	5.65	4.65	4.25	2.39	3.35	2.75
5	3.65	1.5	2.7	6.2	8.4	9.7	5.2	4.35	3.82	2.25	2.9	2.55
6	3.3	1.5	2.6	6.25	8.5	8.65	4.8	4.14	3.35	2.15	3.4	2.65
7	3.0	1.5	2.6	7.45	10.8	9.45	4.6	3.93	4.1	2.05	5.01	1.97
8	2.75	1.4	2.5	13.95	10.35	14.15	6.0	3.92	6.0	2.44	4.06	1.92
9	2.55	1.4	2.4	10.65	9.45	11.1	9.45	3.82	5.05	2.94	4.36	1.88
10	2.4	1.4	2.4	9.00	9.85	8.55	9.95	3.63	4.15	2.17	4.27	1.82
11	2.3	1.4	2.4	9.50	9.7	7.1	9.75	3.45	3.95	1.95	4.18	1.79
12	2.15	1.5	2.55	14.0	8.35	6.05	10.45	3.31	3.69	1.88	4.50	1.78
13	2.1	1.75	2.8	12.05	7.45	5.5	9.05	3.17	3.29	1.93	4.85	1.72
14	2.0	1.75	8.75	11.00	6.35	5.3	7.55	3.35	2.95	1.91	6.50	1.70
15	1.9	6.9	3.80	9.2	5.6	5.15	6.6	2.90	2.78	1.99	6.19	3.05
16	1.8	7.1	4.45	7.55	5.35	4.85	5.8	2.85	2.62	2.65	12.6	2.52
17	1.8	5.05	14.9	6.65	5.15	4.65	5.3	2.82	3.00	3.56	10.32	3.77
18	1.8	3.95	21.25	5.4	5.0	4.55	4.9	2.68	3.45	5.61	7.27	2.97
19	1.8	3.85	15.90	4.95	4.85	4.6	4.6	2.61	3.35	4.65	5.67	2.50
20	2.0	3.95	9.85	5.05	4.7	4.6	4.3	2.49	3.20	5.48	4.21	2.30
21	2.0	3.95	7.25	5.05	4.5	4.85	4.1	2.38	2.90	5.37	4.35	2.12
22	2.0	3.70	5.9	5.15	4.5	5.1	4.3	2.35	2.65	5.25	3.77	2.0
23	1.9	3.55	5.35	8.1	4.55	5.55	4.25	2.52	2.50	7.61	3.45	2.0
24	1.8	3.3	4.7	9.05	5.0	5.55	4.20	2.50	2.47	5.45	3.2	1.91
25	1.8	3.05	4.3	7.8	10.5	4.95	4.0	2.63	3.05	4.58	2.97	1.82
26	1.7	2.9	5.3	6.6	13.2	4.75	4.15	2.69	6.90	3.85	2.82	1.76
27	1.7	2.9	5.5	5.5	10.1	7.8	5.2	2.45	6.15	3.34	2.67	1.70
28	1.7	2.8	6.4	5.35	8.3	11.4	6.55	2.28	4.48	3.11	2.54	1.75
29	1.65	3.95	15.0	5.0	7.35	13.25	6.6	2.39	3.67	3.62	2.44	1.90
30	1.6	3.0	16.35	5.1	.....	11.6	6.2	2.66	3.17	3.33	2.37	2.04
31	1.6	.....	10.35	5.2	.....	9.35	.....	3.04	.....	2.95	2.27	.....

Daily gage height, in feet, of Tug Fork at Kermit, W. Va., for the years ending September 30, 1915-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
1	4.15	2.20	2.90	5.65	9.42	12.30	6.20	4.60	4.57	2.55	2.40	3.75
2	3.35	2.20	2.90	5.05	13.60	20.80	5.90	4.45	5.13	2.27	2.29	4.02
3	2.80	2.17	2.90	6.47	9.40	24.60	5.54	4.38	6.70	2.14	2.83	3.15
4	2.51	2.15	2.90	10.27	7.40	25.90	2.10	4.25	5.60	2.51	3.40	2.70
5	2.26	2.09	3.00	20.70	6.24	29.75	5.41	4.40	5.11	2.32	3.42	2.43
6	2.14	2.00	3.05	19.35	5.20	15.60	11.15	4.57	4.05	2.42	2.70	2.35
7	2.25	1.98	2.92	12.75	5.30	11.45	10.95	4.37	3.73	2.32	2.55	3.00
8	1.92	1.90	2.80	9.40	5.10	14.60	9.05	4.23	3.36	2.22	2.77	3.90
9	1.86	1.90	2.77	7.64	5.05	11.65	7.75	4.63	3.23	2.30	3.50	4.75
10	1.97	2.05	2.70	6.35	4.52	9.92	6.80	5.85	3.66	2.00	2.55	4.30
11	1.90	2.10	2.65	5.80	4.55	8.60	6.10	6.05	4.16	2.15	3.68	3.48
12	1.87	2.00	2.80	5.01	4.45	10.10	5.58	5.50	3.95	2.35	3.11	3.00
13	1.95	2.33	2.70	4.70	3.97	16.00	5.38	5.07	3.50	2.00	2.77	2.67
14	1.91	2.45	2.60	4.95	4.15	14.85	5.14	4.70	3.31	1.98	2.48	2.47
15	1.80	2.46	2.60	4.95	5.10	11.95	4.90	4.35	3.34	2.30	2.27	2.27
16	1.87	2.45	2.70	5.30	6.79	9.95	4.68	4.10	2.86	2.70	2.19	2.17
17	2.07	2.50	2.60	5.26	7.65	12.80	4.39	3.88	2.72	3.45	2.30	2.11
18	3.40	2.42	2.50	5.10	6.80	14.75	4.10	3.63	2.60	3.84	1.96	2.35
19	5.30	2.40	2.70	5.17	6.55	11.00	4.40	3.42	2.49	3.83	1.96	1.94
20	5.65	2.36	2.95	5.10	9.80	9.00	3.93	3.26	2.53	3.94	1.97	1.82
21	5.02	2.30	2.85	6.00	17.50	8.25	3.87	3.30	2.43	3.60	1.86	1.87
22	4.01	2.25	4.95	13.65	11.40	8.10	3.83	3.25	2.31	3.20	1.77	1.72
23	3.45	2.25	10.25	11.80	8.81	8.29	3.68	3.24	2.33	3.28	1.85	1.62
24	3.07	2.36	7.30	9.67	16.35	20.25	3.63	3.15	2.30	4.30	2.00	1.67
25	2.85	2.54	5.52	7.70	17.80	19.70	3.50	2.93	2.26	4.40	3.14	1.69
26	2.65	2.30	4.66	6.47	12.15	11.7	3.64	2.79	2.17	4.27	3.00	1.77
27	2.51	2.40	4.25	5.67	8.60	9.45	3.48	3.88	2.35	4.05	2.53	1.90
28	2.41	2.42	8.30	5.29	9.00	8.8	3.43	7.03	2.35	3.26	2.25	5.07
29	2.32	2.65	17.30	5.00	....	8.30	4.13	8.25	2.33	3.15	2.05	5.37
30	2.27	2.80	10.20	6.30	....	7.65	4.63	5.95	2.30	2.86	2.45	4.27
31	2.20	....	7.00	6.82	....	7.15	....	4.68	....	2.67	2.29	....
1917-18												
1	3.42	3.85	3.35	4.40	13.5	5.98	5.90	5.65	3.40	4.50	4.70	3.15
2	3.35	3.76	3.82	4.05	10.05	5.62	5.56	5.30	3.20	4.10	4.00	3.12
3	2.60	3.45	3.85	3.98	8.40	5.15	5.48	4.94	3.00	3.80	3.32	3.12
4	2.40	3.39	3.65	3.80	7.41	4.90	5.56	4.71	2.95	3.40	2.90	3.10
5	2.38	3.10	3.45	3.74	5.94	9.26	5.60	4.58	2.62	3.10	2.70	2.80
6	2.29	2.88	3.25	3.82	5.74	11.20	5.35	4.41	2.50	2.90	2.50	2.30
7	2.16	2.79	3.15	6.20	6.00	15.55	5.25	4.29	2.75	2.70	2.40	4.15
8	2.30	2.68	3.30	8.20	5.82	15.85	11.25	4.08	3.10	2.65	2.20	4.28
9	2.10	2.60	3.18	7.68	5.85	10.80	19.55	4.00	3.10	2.80	2.10	3.80
10	2.35	2.50	3.00	6.55	8.22	8.90	14.05	3.97	3.15	2.62	3.60	3.60
11	2.00	2.45	2.90	6.3	9.40	8.32	10.60	3.89	2.85	2.60	2.58	3.40
12	2.16	2.40	3.10	7.12	8.15	7.88	9.65	3.88	3.60	2.55	2.50	3.30
13	2.32	2.39	4.02	6.90	7.45	8.82	9.30	4.10	2.40	2.40	3.00	2.95
14	2.26	2.36	4.18	9.15	6.45	9.42	8.75	5.35	2.30	2.35	2.48	2.75
15	2.31	2.30	4.00	8.50	6.02	9.12	8.05	5.90	2.20	2.32	2.25	2.60
16	2.36	2.30	3.65	8.38	5.65	7.98	7.25	5.25	2.12	2.20	2.75	2.55
17	2.26	2.25	3.20	7.80	5.45	6.95	6.70	4.70	2.10	2.20	2.75	2.42
18	2.19	2.20	2.88	7.45	5.16	6.32	6.42	4.25	2.35	2.28	2.70	2.50
19	4.60	2.18	2.82	6.80	4.96	5.82	6.22	3.92	2.12	2.30	2.60	2.45
20	5.35	2.11	2.80	6.18	8.55	5.34	6.01	4.00	2.00	2.48	2.55	2.50
21	4.05	2.10	2.80	5.65	10.22	5.65	6.41	5.20	2.10	3.00	3.50	3.20
22	3.61	2.10	2.80	5.55	8.68	9.80	10.30	5.52	2.35	2.57	2.92	3.10
23	3.40	2.10	3.40	5.45	7.45	9.75	8.86	4.75	2.60	2.40	2.55	3.50
24	3.50	2.10	3.25	5.2	6.72	9.80	7.70	4.35	3.32	2.30	2.32	3.35
25	3.58	2.08	3.36	5.22	6.04	14.40	6.84	4.82	3.00	2.28	2.15	3.00
26	3.62	2.00	4.22	5.35	6.00	(13.65	6.25	4.38	5.90	2.20	2.15	2.78
27	3.55	2.00	4.20	6.65	6.10	10.95	5.95	3.92	11.35	2.25	2.02	2.60
28	3.42	2.20	4.34	31.85	6.48	9.14	6.20	3.71	6.60	2.20	3.00	2.50
29	3.36	3.05	3.62	34.00	....	8.15	6.26	4.65	4.95	2.55	3.60	2.40
30	3.76	3.10	4.72	15.25	....	7.00	6.00	3.82	4.20	2.45	3.20	2.30
31	3.66	....	4.40	19.75	....	6.36	....	3.38	....	6.00	3.22	....

Daily gage height, in feet, of Tug Fork at Kermit, W. Va., for the years ending September 30, 1915-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1918-19												
1	2.20	10.0	3.70	9.0	4.30	8.08	9.70	4.95	3.90	3.08	2.48	2.25
2	2.15	6.80	3.55	26.4	4.00	7.00	8.80	7.25	3.60	3.05	3.20	2.50
3	2.10	5.30	3.40	23.3	4.20	6.40	7.60	7.50	3.35	2.78	3.90	2.80
4	2.00	4.50	3.35	12.3	4.18	5.80	6.65	6.80	3.15	2.55	4.25	2.00
5	1.95	4.10	3.30	9.0	4.15	5.45	6.10	6.08	3.02	2.40	3.38	1.90
6	1.90	3.80	3.20	8.0	4.15	7.00	5.70	5.42	2.90	2.25	2.90	1.75
7	1.85	3.55	3.10	6.7	3.95	8.85	5.38	4.48	2.75	2.30	2.65	1.65
8	1.82	3.40	2.95	6.5	3.80	7.76	5.12	4.70	2.70	2.28	2.80	1.60
9	1.78	3.20	2.90	6.7	3.90	7.90	5.00	4.85	2.90	2.15	3.10	1.49
10	1.75	3.10	2.95	6.38	3.68	8.00	4.75	4.95	2.80	2.45	2.40	....
11	1.70	3.00	3.10	5.75	3.68	7.50	4.70	8.68	2.75	2.70	2.30	1.55
12	1.70	2.90	4.70	5.50	3.70	6.70	7.85	7.20	2.74	2.85	2.62	1.92
13	1.70	2.80	5.92	5.20	3.68	6.00	7.6	5.46	2.62	2.82	2.80	1.80
14	1.68	2.70	4.40	5.10	3.85	5.50	6.75	5.30	2.78	2.48	2.60	1.60
15	1.68	2.70	11.70	5.48	3.95	5.30	6.1	5.40	2.65	5.25	2.55	....
16	1.65	2.65	11.20	6.08	4.10	4.92	6.75	5.54	2.55	4.00	2.40	1.80
17	1.65	2.65	7.80	6.80	4.10	4.68	5.85	5.50	2.38	7.40	3.30	1.79
18	1.65	2.75	6.10	6.95	3.95	4.80	5.5	5.68	3.38	7.50	3.03	1.60
19	1.65	3.00	5.15	12.5	3.95	4.88	5.2	5.60	5.10	5.10	2.95	1.50
20	1.70	3.08	4.60	10.4	3.85	4.9	5.02	5.65	4.10	5.32	2.68	1.60
21	1.95	3.10	4.25	8.4	4.10	4.82	4.85	12.60	3.28	5.40	2.50	1.90
22	2.10	3.10	4.45	7.0	4.40	4.68	4.60	9.10	2.70	4.95	2.25	1.80
23	2.45	3.05	7.30	6.20	5.25	4.40	4.78	7.20	2.65	4.70	2.15	2.00
24	2.60	3.00	7.60	11.2	5.85	4.25	5.48	6.10	2.65	3.85	2.00	2.00
25	2.40	3.00	6.90	11.3	6.60	4.12	7.0	8.40	2.80	3.32	1.90	2.10
26	2.35	2.95	6.00	9.15	9.35	4.00	6.8	8.00	4.30	3.00	1.82	2.00
27	2.30	2.90	5.15	8.50	12.10	4.10	6.1	6.90	4.23	2.75	1.72	2.20
28	4.18	2.90	4.65	6.55	9.60	17.50	5.5	5.50	3.95	2.60	1.70	2.15
29	3.50	3.20	4.35	5.78	....	12.00	5.2	5.50	5.60	2.50	1.66	1.82
30	3.60	3.60	4.02	5.30	....	8.70	4.92	4.90	4.42	2.40	1.65	1.70
31	12.90	....	3.90	4.90	....	8.42	....	4.35	....	2.35	1.70	....
1919-20												
1	1.60	5.18	5.00	3.50	6.00	6.32	5.15	5.38	3.20	2.95	1.90	3.50
2	1.58	20.90	4.60	3.50	5.32	5.50	10.1	5.00	3.05	3.00	1.95	3.50
3	1.85	13.7	4.50	3.75	5.02	5.75	16.7	4.88	2.85	3.75	1.85	3.65
4	1.36	8.60	4.20	4.00	5.03	6.00	11.3	4.70	2.91	3.70	1.90	2.50
5	1.60	6.50	4.00	3.95	5.00	6.50	9.38	4.48	7.60	4.80	1.90	2.80
6	1.70	5.40	4.10	3.90	4.95	8.55	8.65	4.22	12.00	2.96	2.10	3.06
7	3.60	4.75	26.70	4.10	7.00	8.75	8.70	4.05	8.60	2.78	2.50	1.95
8	2.92	4.30	19.0	4.55	6.30	6.80	9.95	4.70	5.43	2.85	1.95	1.80
9	2.70	4.05	11.6	15.5	6.10	6.00	9.70	5.90	4.80	2.90	2.30	1.95
10	2.50	3.80	8.4	10.3	5.41	5.88	8.32	8.05	4.60	2.90	2.30	2.01
11	2.40	3.60	9.9	7.65	5.25	5.45	7.10	6.85	4.20	2.78	4.80	2.00
12	2.88	3.70	8.8	5.15	6.58	5.30	7.11	5.98	3.80	2.72	3.10	2.25
13	5.35	3.60	7.55	5.50	6.65	10.5	6.30	5.52	3.65	2.57	2.10	2.00
14	6.05	3.40	13.1	5.20	6.90	20.0	6.02	5.50	3.42	2.50	2.90	2.20
15	5.92	3.30	12.6	5.00	7.30	12.0	5.70	5.11	3.25	2.65	2.75	2.50
16	7.58	3.90	10.1	4.60	6.68	9.78	5.40	5.00	3.40	2.42	2.90	2.65
17	8.20	3.80	8.3	4.70	5.85	13.7	5.38	4.62	3.18	2.40	3.00	2.55
18	7.10	3.70	7.0	4.90	5.15	12.3	5.00	4.60	3.30	2.20	3.65	2.48
19	5.73	3.60	6.75	4.60	5.92	18.0	4.82	4.35	3.25	2.25	2.95	1.75
20	4.60	3.50	6.65	4.37	5.01	20.1	4.60	4.35	4.01	2.30	4.60	2.10
21	3.88	3.10	6.50	4.60	5.15	13.5	5.42	4.62	4.25	2.40	5.50	1.95
22	3.50	3.10	6.40	21.9	7.90	12.0	6.25	4.65	5.85	2.10	4.60	1.95
23	3.30	3.15	5.40	29.5	13.0	10.96	6.20	4.50	5.40	2.25	4.05	1.90
24	4.70	3.10	5.30	28.5	11.5	7.50	6.08	4.00	4.80	2.10	3.55	2.10
25	10.00	3.05	5.15	23.0	10.3	6.80	5.50	4.35	4.50	2.53	2.90	2.00
26	7.90	3.00	4.90	14.0	8.9	6.30	5.10	4.30	4.50	2.46	2.00	1.98
27	7.00	6.10	4.60	8.90	7.52	6.01	5.52	5.20	3.00	2.50	2.95	2.10
28	4.85	5.65	4.25	7.65	6.60	5.40	6.48	4.80	2.96	2.65	3.05	2.30
29	4.20	5.33	4.00	6.50	6.40	5.15	6.14	4.16	2.80	2.34	2.95	2.20
30	3.77	5.40	3.70	6.50	....	5.10	5.85	4.30	2.60	1.95	2.80	2.10
31	3.50	....	3.40	6.00	....	5.00	....	4.00	....	1.93	2.80	....

Daily discharge, in second-feet, of Tug Fork at Kermit, W. Va., for the years ending September 30, 1915-1917.

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1915					1915				
1	1,820	118	132	165	16	1,610	290	365	....
2	2,280	220	118	148	17	1,100	232	185	....
3	1,900	305	118	140	18	685	208	365	....
4	1,340	1,160	195	148	19	470	175	400	....
5	935	990	350	....	20	350	490	260	232
6	640	730	290	....	21	365	1,220	220	320
7	452	685	175	....	22	290	1,340	185	350
8	435	550	132	....	23	208	780	148	208
9	640	452	110	....	24	165	470	118	165
10	470	382	110	....	25	140	335	102	165
11	335	572	102	....	26	132	260	90	195
12	572	435	132	....	27	118	232	85	118
13	595	435	185	....	28	102	185	118	132
14	418	350	195	....	29	95	148	245	155
15	1,400	400	320	....	30	102	148	220	155
					31	....	148	220	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	2,200	95	418	3,980	6,530	2,040	3,720	1,900	640	382	320	195
2	3,560	95	382	3,640	8,740	3,080	2,840	1,610	435	305	305	195
3	1,680	85	365	3,560	6,310	6,750	2,360	1,340	418	275	260	195
4	935	85	335	3,000	4,900	8,140	1,900	1,220	990	245	572	350
5	685	85	335	2,360	4,160	5,400	1,610	1,100	780	208	400	290
6	550	85	305	2,360	4,250	4,340	1,340	935	572	185	595	320
7	435	85	305	3,320	6,530	5,100	1,220	830	935	165	1,470	148
8	350	75	275	10,300	6,100	10,600	2,200	830	2,200	260	935	140
9	290	75	245	6,310	5,100	6,860	5,100	780	1,470	418	1,100	140
10	245	75	245	4,700	5,500	4,340	5,700	685	990	185	1,040	125
11	220	75	245	5,200	5,400	3,080	5,500	595	880	148	990	125
12	185	85	290	10,300	4,160	2,200	6,100	550	730	140	1,160	125
13	175	118	365	7,900	3,320	1,820	4,700	490	550	148	1,340	110
14	155	118	4,520	6,750	2,520	1,680	3,480	572	418	140	2,600	110
15	140	2,920	780	4,900	1,900	1,610	2,680	400	365	155	2,360	452
16	125	3,080	1,100	3,480	1,750	1,340	2,040	382	305	320	8,620	275
17	125	1,470	11,500	2,680	1,610	1,220	1,680	365	435	685	6,000	780
18	125	880	20,600	1,750	1,470	1,220	1,400	335	595	1,900	3,240	418
19	125	780	12,800	1,470	1,340	1,220	1,220	305	572	1,220	1,970	275
20	155	880	5,500	1,470	1,280	1,220	1,040	275	510	1,820	990	220
21	155	880	3,160	1,470	1,160	1,340	935	245	400	1,750	1,100	175
22	155	730	2,120	1,610	1,160	1,540	1,040	232	320	1,610	780	155
23	140	685	1,750	3,890	1,220	1,900	990	275	275	3,480	595	155
24	125	550	1,280	4,700	1,470	1,900	990	275	260	1,750	510	140
25	125	452	1,040	3,640	6,200	1,470	880	320	452	1,220	418	125
26	110	400	1,680	2,680	9,340	1,340	990	335	2,920	780	665	118
27	110	400	1,820	1,820	5,800	3,640	1,610	260	2,360	572	320	110
28	110	365	2,520	1,750	4,070	7,190	2,680	220	1,160	470	290	118
29	102	418	11,600	1,470	3,320	9,340	2,680	245	730	685	260	140
30	95	435	13,500	1,540	....	7,420	2,360	320	490	572	232	165
31	95	....	6,100	1,610	....	5,100	....	452	....	418	208	....

Daily discharge, in second-feet, of Tug Fork at Kermit, W. Va., for the years ending September 30, 1915-1917—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
1	990	195	400	1,900	5,100	8,260	2,360	1,220	1,220	290	245	780
2	572	195	400	1,470	9,820	20,000	2,120	1,100	1,540	208	220	880
3	365	185	400	2,600	5,100	26,000	1,820	1,100	2,760	185	382	490
4	275	185	400	6,000	3,320	28,000	1,540	990	1,900	275	595	335
5	208	175	435	19,800	2,360	34,300	1,750	1,100	1,540	220	595	260
6	185	155	452	17,800	1,610	12,400	6,970	1,220	880	245	335	232
7	208	155	400	8,860	1,680	7,190	6,750	1,100	730	220	290	435
8	140	140	365	5,100	1,540	11,100	4,700	990	572	195	350	830
9	132	140	350	3,480	1,470	7,420	3,640	1,220	530	220	640	1,340
10	148	165	335	2,520	1,160	5,600	2,840	2,040	730	155	290	1,040
11	140	175	320	2,040	1,220	4,340	2,280	2,200	990	185	730	640
12	132	155	365	1,470	1,100	5,800	1,900	1,820	880	232	470	435
13	148	232	335	1,280	880	12,900	1,750	1,540	640	155	350	320
14	140	260	305	1,470	990	11,300	1,540	1,280	550	155	275	260
15	125	260	305	1,470	1,540	7,900	1,400	1,100	572	220	208	208
16	132	260	335	1,680	2,840	5,700	1,280	935	382	335	195	185
17	165	275	305	1,680	3,480	8,860	1,100	830	335	595	220	175
18	595	245	275	1,540	2,840	11,300	935	685	305	780	148	232
19	1,680	245	335	1,610	2,680	6,750	1,100	595	275	780	148	148
20	1,900	232	418	1,540	5,500	4,700	830	530	290	830	148	125
21	1,470	220	382	2,200	15,000	3,980	830	550	260	685	132	132
22	880	208	1,470	9,820	7,190	3,890	780	530	220	510	118	110
23	595	208	5,900	7,660	4,520	4,070	730	530	232	550	132	95
24	452	232	3,240	5,400	13,500	19,000	685	490	220	1,040	155	102
25	382	232	1,820	3,560	15,400	18,300	640	418	208	1,100	490	110
26	320	220	1,280	2,600	8,140	7,540	685	365	185	1,040	435	118
27	275	245	990	1,970	4,340	5,100	640	830	232	880	290	140
28	245	245	4,070	1,680	4,700	4,520	595	3,000	232	530	208	1,540
29	220	420	14,700	1,470	....	4,070	935	3,980	232	490	165	1,750
30	208	365	5,900	2,440	....	3,480	1,220	2,200	220	382	260	1,040
31	195	....	3,000	2,840	....	3,160	....	1,280	....	320	220	....

Monthly discharge of Tug River at Kermit, W. Va., for the years ending September 30, 1915-1917.

(Drainage area, 1,240 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1915					
June	2,280	95	672	0.542	0.60
July	1,340	118	466	.376	.43
August	400	85	193	.156	.18
September	....	....	216	.174	.19
1915-16					
October	3,560	95	445	.359	.41
November	3,080	75	552	.445	.50
December	20,600	245	3,470	2.80	3.23
January	10,300	1,470	3,730	3.01	3.47
February	9,340	1,160	4,020	3.24	3.49
March	10,600	1,220	3,720	3.00	3.46
April	6,100	880	2,430	1.96	2.19
May	1,900	220	603	.486	.56
June	2,920	260	805	.649	.72
July	3,480	140	729	.588	.68
August	8,620	208	1,330	1.07	1.23
September	780	110	213	.172	.19
The year	20,600	75	1,840	1.48	20.13
1916-17					
October	1,900	125	439	0.345	0.41
November	365	140	217	.175	.20
December	14,700	275	1,610	1.30	1.50
January	19,800	1,280	4,100	3.31	3.82
February	15,400	880	4,610	3.72	3.87
March	34,300	3,160	10,200	8.23	9.49
April	6,970	595	1,880	1.52	1.70
May	3,980	365	1,220	.984	1.13
June	2,760	185	662	.534	.60
July	1,100	155	452	.365	.42
August	730	118	304	.245	.28
September	1,750	95	483	.390	.44
The year	34,300	95	2,180	1.76	23.86

BLAINE CREEK AT YATESVILLE, KY.

LOCATION.—At covered highway bridge one-fourth mile above Yatesville, Lawrence County. Morgan Branch enters on left about 2 miles above station.

DRAINAGE AREA.—216 square miles (United States Engineer Corps).

RECORDS AVAILABLE.—June 1, 1915, to September 30, 1920.

GAGE.—Vertical staff gage in two sections attached to elm tree on right bank about 50 feet above bridge.

DISCHARGE MEASUREMENTS.—Made from board walk constructed on inside of bridge near top of siding. Wading measurements are made under bridge.

CHANNEL AND CONTROL.—Stream curved above and straight below bridge, right bank overflows at high stages, stream bed compact sand and gravel; control composed of bed rock extending half way across stream, sand and gravel rest of way, probably permanent.

EXTREME OF DISCHARGE.—1915-1920: Maximum mean daily stage recorded 18.2 feet January 9, 1920 (discharge 7,720 second-feet); minimum stage recorded 0.55 foot August 17, 1917 (discharge 3.5 second-feet),

ICE.—Stage-discharge relation rarely affected by ice.

ACCURACY.—Stage-discharge relation probably permanent; not affected by ice. Rating curve well defined between 20 and 4,000 second-feet; extended beyond these limits. Gage read twice daily to hundredths below and tenths above 10 feet. Daily discharge ascertained by applying mean daily gage heights to rating table. Records good.

COOPERATION.—Base data furnished by United States Engineer Corps.

Discharge measurements of Blaine Creek at Yatesville, Ky., during the years ending September 30, 1915-1917.

Date	Made by—	Gage Height	Dis-charge	Date	Made by—	Gage Height	Dis-charge
1915				1916			
June 12	F. C. Sammons	6.4	1,620	June 6	F. C. Sammons	1.39	33
12	F. C. Sammons	5.7	1,310	17	F. C. Sammons	2.74	240
July 2	F. C. Sammons	4.6	885	17	F. C. Sammons	3.01	329
8	F. C. Sammons	9.8	3,310	19	F. C. Sammons	9.61	3,280
8	F. C. Sammons	11.2	4,150	19	F. C. Sammons	10.80	3,570
Nov. 23	Loeb & Sammons	2.52	267	19	F. C. Sammons	11.05	3,830
Dec. 29	F. C. Smamons	11.45	4,350	19	F. C. Sammons	11.13	3,785
29	F. C. Sammons	12.05	4,730	1917			
1916				Jan. 22	H. E. Frye	15.25	5,310
Jan. 28	Frye & Sammons	2.6	246	22	H. E. Frye	15.40	5,440
28	Frye & Sammons	2.6	266	Feb. 24	H. E. Frye	7.90	2,370
28	Frye & Sammons	2.6	247	Mar. 12	Frye & Sammons	10.91	3,620
Feb. 25	Frye & Sammons	5.7	1,330	12	Frye & Sammons	10.95	3,640
25	Frye & Sammons	5.57	1,300	19	Frye & Sammons	3.79	614
May 4	Frye & Sammons	6.90	1,870	Apr. 26	H. E. Frye	1.81	73.7

Daily gage height, in feet, of Blaine Creek at Yatesville, Ky., for the years ending September 30, 1915-1920.

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1915					1915				
1	2.10	3.10	2.10	1.45	16	2.05	1.95	1.75	1.15
2	2.25	4.40	1.80	1.35	17	1.85	1.80	1.50	1.05
3	3.30	2.95	2.05	1.30	18	1.65	1.60	3.25	1.05
4	2.80	2.90	2.80	1.20	19	1.60	1.60	2.00	0.95
5	2.05	2.60	3.00	1.35	20	1.45	1.75	1.80	1.15
6	1.85	2.45	1.95	1.95	21	1.40	3.20	1.80	1.20
7	1.60	2.15	1.75	1.85	22	1.45	2.10	1.95	1.35
8	2.40	9.00	1.60	1.65	23	1.25	1.80	1.65	1.25
9	1.90	6.05	1.50	1.50	24	1.15	1.60	1.50	1.10
10	1.55	3.50	1.40	1.60	25	1.10	1.55	1.50	1.05
11	1.45	4.10	1.20	1.60	26	1.05	1.45	1.45	1.00
12	5.95	3.05	2.30	1.35	27	1.00	1.30	1.35	1.00
13	2.85	2.70	2.05	1.30	28	1.00	1.45	1.35	1.10
14	2.45	2.50	1.70	1.20	29	1.10	1.55	1.55	1.00
15	2.00	2.15	2.20	1.20	30	1.35	1.65	2.05	1.00
					31	....	3.20	1.70	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	9.85	1.5	2.45	3.55	7.3	3.75	3.4	2.3	1.87	1.4	1.0	1.37
2	5.00	1.4	2.25	3.7	5.05	3.2	3.2	2.2	1.6	1.35	0.97	1.6
3	3.2	1.4	2.2	3.5	4.0	3.2	3.0	2.2	1.50	1.3	0.9	2.1
4	2.65	1.4	2.10	3.05	3.6	3.05	2.85	5.75	1.48	1.2	0.95	1.85
5	3.25	1.35	2.05	2.9	3.45	3.25	2.7	3.8	1.44	1.2	1.1	1.52
6	3.3	1.30	2.0	3.2	3.85	3.25	2.5	3.1	1.4	1.18	1.02	1.42
7	2.5	1.3	1.9	3.4	4.1	5.15	2.3	4.0	1.62	1.10	1.51	1.37
8	2.15	1.3	1.8	3.35	3.4	4.55	3.55	3.71	1.66	1.08	1.50	1.55
9	1.95	1.25	1.7	3.25	3.5	3.45	6.25	2.9	1.48	1.09	1.82	1.62
10	1.85	1.3	1.7	4.45	3.75	3.50	4.30	2.66	1.50	1.15	1.65	1.52
11	1.75	1.25	1.7	8.35	3.35	2.90	3.65	2.45	1.92	1.10	1.55	1.45
12	1.65	1.35	1.8	9.6	3.15	2.65	3.2	2.35	1.8	1.08	3.87	1.32
13	1.60	1.8	1.95	12.35	5.05	2.5	2.95	2.11	1.52	1.06	4.35	1.27
14	1.5	1.8	2.05	5.45	4.35	2.55	2.75	2.0	1.41	1.05	2.45	1.22
15	1.45	10.25	1.95	3.85	3.65	2.55	2.6	1.94	2.06	1.05	2.17	1.42
16	1.3	5.4	2.45	3.5	3.45	2.65	2.5	1.84	2.70	1.09	8.2	1.69
17	1.4	3.25	10.85	3.1	3.25	2.7	2.45	1.80	2.65	1.55	5.25	1.41
18	1.55	2.75	15.65	2.95	3.1	2.65	2.25	1.72	2.31	1.71	3.05	1.27
19	5.25	5.2	10.4	4.00	2.9	2.6	2.2	1.62	8.7	1.42	2.06	1.2
20	3.5	4.3	4.45	3.20	2.8	2.5	2.15	1.55	4.8	1.9	3.65	1.16
21	2.9	3.2	3.85	2.90	2.6	2.9	2.1	1.51	3.3	2.6	2.57	1.15
22	2.6	2.8	3.3	3.35	2.55	2.9	2.15	1.49	2.66	1.75	2.35	1.12
23	2.2	2.55	2.95	4.25	2.55	2.6	2.0	1.55	2.3	1.55	2.2	1.12
24	2.05	2.35	2.75	3.45	3.05	2.45	2.0	1.6	2.05	1.3	2.27	1.09
25	1.9	2.15	2.8	3.05	5.45	2.4	2.05	1.48	1.95	1.22	1.97	1.06
26	1.8	2.05	4.25	2.85	4.00	2.3	2.1	1.42	1.85	1.2	1.77	1.04
27	1.7	3.45	3.65	2.70	3.35	6.7	2.7	1.45	1.65	1.12	2.65	1.00
28	1.65	3.05	4.4	2.60	2.9	9.65	2.55	1.47	1.6	1.22	1.82	1.00
29	1.6	2.85	10.85	3.0	2.95	11.15	2.55	1.42	1.5	1.07	1.72	1.10
30	1.55	2.55	6.6	4.85	....	5.0	2.4	2.36	1.48	1.05	1.62	1.24
31	1.5	....	4.2	3.75	....	3.95	....	2.47	....	1.01	1.50	....

Daily gage height, in feet, of Blaine Creek at Yatesville, Ky., for the years ending September 30, 1915-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
1	1.30	1.22	1.54	2.65	4.35	9.05	2.70	1.99	3.70	2.25	1.12	2.60
2	1.13	1.19	1.50	2.47	3.60	5.10	2.85	1.85	8.40	1.55	1.15	2.35
3	1.11	1.18	1.49	4.60	2.82	9.10	3.35	1.78	8.05	1.53	1.14	5.05
4	1.07	1.25	1.45	5.45	3.82	7.72	2.95	1.68	4.25	1.41	1.11	3.15
5	1.02	1.25	2.36	7.20	3.30	5.50	3.40	1.74	3.34	1.31	1.05	2.20
6	1.00	1.20	1.40	7.40	3.45	4.47	6.90	1.68	2.95	1.33	1.00	1.25
7	.97	1.20	1.27	5.00	3.20	5.71	4.80	1.69	3.00	1.31	1.06	3.10
8	1.05	1.20	2.05	3.15	2.89	8.92	3.70	1.65	2.70	1.31	1.15	10.00
9	.92	1.18	1.82	2.96	2.85	5.60	3.45	1.70	2.70	1.60	.90	6.80
10	.95	1.25	1.91	2.67	2.50	3.95	2.90	1.65	2.75	1.36	.85	5.75
11	.90	1.20	1.82	2.57	2.75	3.40	2.78	1.60	2.83	1.31	.90	3.40
12	.90	1.35	1.72	2.37	2.75	9.25	2.70	1.74	2.55	1.17	1.00	1.50
13	1.15	1.22	1.79	2.25	2.75	7.60	2.80	1.80	2.33	1.16	.75	1.15
14	1.07	1.20	1.60	3.10	2.00	7.10	2.65	1.70	2.05	1.25	.95	1.10
15	1.07	1.17	1.45	3.90	2.20	4.40	2.45	1.64	2.00	1.20	.95	1.10
16	.97	1.20	1.50	4.80	2.55	3.85	2.16	1.55	1.90	1.32	.75	1.15
17	.99	1.12	1.57	5.10	3.65	5.94	2.30	1.50	1.74	1.40	.45	1.05
18	.95	1.10	1.72	4.80	4.04	4.80	2.18	1.46	1.70	1.55	.70	1.05
19	2.60	1.12	1.87	4.45	3.70	3.80	2.13	1.42	1.60	1.67	.80	1.15
20	3.25	1.05	1.50	4.25	5.32	3.35	2.10	1.41	2.45	2.21	1.00	1.05
21	2.85	1.12	3.30	5.67	5.00	6.00	2.05	1.37	2.30	1.92	.95	.95
22	2.15	1.20	6.65	15.05	3.40	5.50	2.05	1.30	1.85	2.02	.95	1.25
23	1.80	1.20	3.90	6.05	3.72	5.20	1.98	1.38	1.70	1.95	1.05	1.10
24	1.69	1.25	3.10	3.97	7.70	13.40	1.85	1.47	1.46	1.62	1.05	1.25
25	1.55	1.53	2.72	3.51	4.95	5.65	1.78	1.35	1.55	2.35	.95	1.05
26	1.45	1.46	2.46	3.10	3.80	4.20	1.83	1.30	1.53	2.65	1.30	1.05
27	1.46	1.43	2.42	2.85	3.37	3.85	1.75	1.82	1.50	1.90	.95	1.40
28	1.42	1.35	7.72	2.85	8.20	3.57	1.87	7.70	2.13	1.89	.95	2.20
29	1.32	1.75	5.40	2.95	....	3.26	1.95	5.00	3.25	1.60	.90	1.95
30	1.26	1.60	4.35	3.06	....	3.05	2.35	3.25	2.35	1.41	.90	1.04
31	1.28	....	3.72	2.96	....	2.91	....	2.80	....	1.19	.95	....
1917-18												
1	2.65	2.65	1.25	4.40	3.60	2.75	2.40	2.20	1.40	2.80	1.60	1.25
2	2.18	2.45	1.50	4.20	3.10	2.55	2.20	2.10	1.90	2.55	1.50	1.20
3	1.90	2.00	1.35	3.40	2.95	2.45	3.70	1.98	1.60	2.00	1.40	1.20
4	1.70	1.85	1.45	3.10	2.90	2.85	3.70	1.92	1.90	1.70	1.35	1.25
5	1.30	1.85	1.49	3.20	2.95	3.40	3.00	1.90	1.65	1.65	1.30	1.20
6	1.11	1.70	1.51	3.40	3.00	3.40	2.70	1.84	1.40	1.60	1.25	1.15
7	1.06	1.65	1.45	3.60	3.20	3.40	2.70	1.80	1.80	1.50	1.20	1.15
8	.95	1.75	1.50	3.40	3.80	3.20	6.20	1.84	2.70	1.70	1.25	1.10
9	.95	1.55	1.45	3.60	6.20	2.85	5.20	1.82	2.40	1.65	1.30	1.10
10	1.06	1.40	1.64	3.20	5.40	2.75	3.80	1.72	1.60	1.60	1.50	1.20
11	1.25	1.55	1.80	3.40	4.40	2.65	3.50	1.75	1.40	1.50	1.40	1.15
12	1.80	1.45	1.35	3.40	3.80	2.65	3.20	1.81	1.35	1.55	1.30	1.15
13	1.45	1.35	1.32	3.20	3.20	4.60	3.15	3.05	1.30	1.50	1.35	1.10
14	1.90	1.55	1.35	3.30	2.95	4.60	2.80	5.00	1.30	1.45	1.30	1.20
15	1.70	1.45	1.39	4.10	2.75	5.40	2.70	3.20	1.25	1.40	1.40	1.30
16	1.70	1.45	1.41	4.80	2.55	3.60	2.60	2.60	1.20	1.35	1.30	1.10
17	1.80	1.55	1.32	4.60	2.35	3.20	2.60	2.70	1.15	1.40	1.45	1.20
18	1.55	1.35	1.41	4.40	2.30	2.75	2.70	3.50	1.20	1.35	1.60	1.50
19	8.90	1.45	1.39	3.90	2.70	2.85	2.45	2.65	1.20	1.40	1.50	1.20
20	5.40	1.35	1.32	3.05	6.60	2.75	2.40	3.40	1.20	1.30	1.40	1.60
21	3.40	1.30	1.39	3.05	4.60	2.90	3.30	3.40	1.10	1.32	1.35	1.30
22	2.95	1.25	2.05	3.20	4.00	3.20	3.10	2.60	1.90	1.30	1.30	1.25
23	2.65	1.25	2.40	3.20	3.80	2.85	2.75	2.25	2.00	1.35	1.25	1.30
24	2.05	1.25	2.45	3.20	3.20	2.90	2.60	2.15	1.45	1.33	1.25	1.30
25	2.05	1.25	3.20	3.20	3.10	4.60	2.50	1.95	1.40	1.35	1.20	1.20
26	2.05	1.30	4.80	3.20	3.40	3.60	2.40	2.05	5.90	1.45	1.20	1.15
27	1.30	1.25	4.40	5.40	3.40	3.20	2.45	2.15	3.00	4.00	1.25	1.20
28	1.50	1.42	4.00	12.20	2.95	2.85	2.35	1.85	2.40	2.00	1.30	1.10
29	1.85	1.48	4.20	11.50	....	2.65	2.40	1.85	2.10	1.70	1.20	1.10
30	2.90	1.35	4.40	5.20	....	2.60	2.30	1.85	2.00	1.80	1.25	1.20
31	2.85	....	4.10	4.10	....	2.50	....	1.65	....	1.60	1.30	....

Daily gage height, in feet, of Blaine Creek at Yatesville, Ky., for the years ending September 30, 1915-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1918-19												
1	1.1	2.5	1.4	10.2	2.6	3.8	2.5	2.5	1.8	1.3	2.3	1.4
2	1.2	2.0	1.4	16.2	2.5	3.6	2.4	3.0	1.7	1.3	1.8	1.4
3	1.15	1.8	1.4	7.6	2.4	3.4	2.3	2.8	1.6	1.2	1.6	1.4
4	1.1	1.7	1.45	4.6	2.5	3.2	2.8	2.6	1.5	1.1	1.5	1.3
5	1.1	1.6	1.45	3.8	2.5	3.4	2.7	2.5	1.5	1.0	1.4	1.3
6	1.1	1.5	1.4	3.8	2.4	6.9	2.5	2.4	1.5	.9	1.4	1.3
7	1.0	1.6	1.3	3.7	2.4	5.3	2.4	2.6	1.6	1.7	1.2	1.2
8	1.0	1.5	1.3	3.6	2.5	5.0	2.4	4.5	2.4	1.4	1.1	1.2
9	1.0	1.5	1.35	3.6	2.5	7.1	2.5	6.6	2.3	1.2	1.1	1.2
10	1.1	1.5	1.5	3.5	2.3	6.4	2.4	13.3	2.0	1.0	1.1	1.5
11	1.15	1.4	1.6	3.4	2.3	4.9	2.6	7.7	1.8	.9	1.0	1.4
12	1.3	1.4	2.0	3.3	2.2	4.0	2.5	5.2	1.7	.8	1.0	1.4
13	1.2	1.4	2.0	3.0	2.4	3.6	3.8	4.0	1.5	.9	1.0	1.3
14	1.25	1.3	1.9	2.9	2.8	3.1	3.3	3.8	1.4	.9	.9	1.3
15	1.2	1.3	3.6	3.0	2.6	3.4	3.0	3.4	1.8	.8	.9	1.2
16	1.2	1.3	3.0	3.0	2.8	3.0	3.2	3.1	1.6	1.0	.9	1.2
17	1.25	1.4	2.5	3.0	2.7	2.9	3.7	2.9	1.8	1.0	.9	1.1
18	1.25	1.4	2.1	2.9	2.6	3.0	3.2	2.6	1.6	.9	1.0	1.1
19	1.2	1.4	2.0	3.0	2.6	2.9	3.1	2.4	1.4	.9	1.2	1.0
20	1.3	1.5	1.9	3.0	2.5	2.8	3.0	2.5	1.3	1.9	1.2	1.0
21	1.35	1.5	1.9	3.0	2.6	2.7	2.6	5.9	1.2	1.7	1.1	1.4
22	1.4	1.55	2.0	2.9	2.7	2.6	2.5	4.0	1.2	1.4	2.0	1.5
23	1.4	1.55	3.8	2.8	3.0	2.5	2.6	3.6	1.2	1.3	2.0	1.8
24	1.45	1.5	4.0	3.6	3.0	2.4	3.3	3.3	1.5	1.1	1.9	1.9
25	1.5	1.5	3.8	4.7	3.0	2.3	3.0	8.0	1.9	1.1	1.7	1.8
26	1.45	1.45	3.5	3.8	4.6	2.3	2.6	5.6	2.0	.9	1.6	1.5
27	1.4	1.4	2.7	3.4	4.4	2.4	2.3	4.2	2.3	.9	1.5	1.4
28	1.4	1.4	2.4	3.4	4.2	4.9	2.4	3.4	2.4	.9	1.5	1.4
29	1.4	1.5	2.2	3.2	....	3.6	2.6	3.2	1.7	1.0	1.4	1.3
30	1.8	1.5	2.1	2.9	....	3.2	2.5	2.7	1.4	1.3	1.3	1.3
31	4.0	....	2.1	2.8	....	2.8	....	2.0	....	1.6	1.5	....
1919-20												
1	1.3	7.0	4.8	2.5	3.2	3.3	2.5	3.4	1.8	1.8	1.9	1.8
2	1.2	15.9	4.0	2.3	3.0	3.4	4.9	3.1	1.7	2.0	1.8	2.0
3	1.2	6.1	3.2	2.4	3.0	3.4	4.5	3.0	6.0	1.9	1.7	1.8
4	1.2	4.3	2.9	2.5	2.9	3.5	5.3	3.0	3.3	1.9	1.6	1.6
5	1.2	4.0	2.7	2.4	2.9	5.7	6.9	2.6	6.9	1.8	1.6	1.6
6	1.3	3.6	4.0	2.6	2.8	4.7	4.9	2.6	4.8	....	1.6	1.7
7	1.3	3.0	17.3	2.7	2.6	3.9	5.8	2.5	3.7	....	1.5	1.6
8	1.2	3.0	14.3	3.1	2.5	4.0	5.5	3.2	3.1	....	1.9	1.7
9	1.2	2.8	6.3	18.2	2.6	3.4	5.0	3.0	2.6	2.6	1.9	1.7
10	1.2	2.6	6.5	17.0	2.4	3.4	4.9	2.9	4.9	2.2	2.0	2.0
11	1.1	2.8	4.9	7.2	2.7	3.2	3.5	2.7	4.5	2.1	1.8	1.8
12	3.0	3.0	4.5	4.3	2.6	3.1	3.2	3.2	4.0	2.2	1.7	1.7
13	3.8	2.8	6.1	3.9	2.9	4.2	3.5	3.6	3.5	2.1	1.7	1.6
14	2.3	2.6	13.0	3.6	2.7	3.8	3.2	3.8	3.0	2.1	1.6	1.5
15	3.9	2.4	7.0	3.3	2.6	3.4	3.0	3.6	2.8	2.0	1.5	1.5
16	3.5	2.4	5.2	3.3	2.6	6.1	2.9	2.8	2.6	1.9	1.6	1.6
17	6.3	2.3	5.0	3.5	2.5	9.5	3.0	2.6	2.5	1.9	1.8	1.6
18	3.6	2.3	4.8	3.2	2.8	6.5	2.9	2.5	2.4	1.8	2.0	1.6
19	2.9	2.2	4.0	3.2	2.7	12.0	3.1	2.6	2.2	1.9	2.0	1.5
20	2.4	2.1	3.5	3.1	2.6	14.5	5.0	2.5	2.2	1.8	1.9	1.5
21	2.2	2.0	3.2	3.5	2.7	5.0	12.1	2.4	2.9	1.8	1.8	1.4
22	2.3	2.0	3.1	12.0	6.9	4.5	6.1	2.3	4.0	1.7	1.7	1.4
23	2.8	2.1	3.0	14.2	5.7	4.0	4.5	2.1	5.3	1.7	1.6	1.5
24	3.4	2.0	2.8	13.0	5.0	3.6	3.7	2.1	3.1	1.6	1.5	1.5
25	3.3	2.0	2.8	8.5	4.4	3.4	3.4	4.1	2.7	1.8	1.5	1.6
26	4.5	6.8	2.7	5.4	3.8	3.4	3.2	2.8	2.4	1.6	1.6	1.6
27	6.5	13.6	2.5	4.2	3.4	3.2	4.0	2.6	2.3	1.7	1.5	1.7
28	4.6	6.5	2.5	4.1	3.3	3.0	5.5	2.3	2.2	1.7	1.6	1.6
29	3.8	5.0	2.4	4.7	3.4	2.9	3.6	2.1	2.0	1.6	1.6	1.6
30	3.0	5.5	2.4	4.6	....	2.7	3.5	2.0	1.9	1.6	1.7	1.5
31	2.4	....	2.3	4.4	....	2.6	....	1.8	....	1.7	1.8	....

NOTE.—Gage not read July 6-8, 1920.

Daily discharge, in second-feet, of Blaine Creek at Yatesville, Ky., for the years ending September 30, 1915-1918.

Day	June	July	Aug.	Sept.	Day	June	July	Aug.	Sept.
1915					1915				
1	132	375	132	38	16	123	105	73	19
2	160	800	80	30	17	88	80	43	15
3	435	331	123	27	18	60	54	405	15
4	290	264	290	21	19	54	54	114	12
5	123	239	345	30	20	38	73	80	19
6	88	204	105	105	21	34	405	80	21
7	54	141	73	88	22	36	132	105	30
8	192	2,820	54	60	23	24	80	60	24
9	96	1,440	43	43	24	19	54	43	17
10	48	495	34	54	25	17	48	43	15
11	38	695	21	54	26	15	38	38	13
12	1,440	360	170	30	27	13	27	30	13
13	304	264	123	27	28	13	38	30	17
14	204	215	66	21	29	17	48	48	13
15	114	141	150	21	30	30	60	123	13
					31	....	405	66	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	3,220	43	204	525	2,020	590	465	170	91	34	13	32
2	1,040	34	160	555	1,040	405	405	150	54	30	12	54
3	405	34	150	495	660	405	345	150	43	27	10	132
4	252	34	132	360	525	360	304	1,360	41	21	12	88
5	405	30	123	317	465	405	264	590	38	21	17	45
6	435	27	114	405	590	405	215	375	34	20	14	36
7	215	27	96	465	695	1,120	170	660	56	17	44	32
8	141	27	80	465	465	880	525	555	61	16	43	48
9	105	24	66	405	495	465	1,530	317	41	17	83	56
10	88	27	66	800	590	495	765	252	43	19	60	45
11	73	24	66	2,520	465	317	525	204	100	17	48	38
12	60	30	80	3,120	405	252	405	181	80	17	625	28
13	54	80	105	4,530	1,040	215	331	132	45	15	800	25
14	43	80	123	1,200	800	227	277	114	35	15	204	22
15	38	3,420	105	590	525	227	239	103	123	15	141	36
16	27	1,200	204	495	465	252	215	86	264	17	2,430	65
17	34	405	3,720	375	405	264	204	80	252	48	1,120	35
18	48	277	6,290	331	375	252	160	69	170	67	360	25
19	1,120	1,120	3,520	660	317	239	150	56	2,670	36	123	21
20	495	765	800	405	290	215	141	48	960	96	525	19
21	317	405	590	317	239	317	132	44	435	239	227	19
22	239	290	435	465	227	317	141	42	252	73	181	18
23	150	227	331	730	227	239	114	48	170	48	150	18
24	123	181	277	465	360	204	114	54	123	27	160	17
25	96	141	290	360	1,200	192	123	41	105	22	109	15
26	80	123	730	304	660	170	132	36	88	21	76	15
27	66	465	525	264	465	1,760	264	38	60	18	252	13
28	60	360	800	239	317	3,120	227	40	54	22	83	13
29	54	304	3,720	345	331	3,920	227	36	43	16	69	17
30	48	227	1,710	960	....	1,040	192	181	41	15	56	23
31	43	....	730	590	....	660	....	204	....	13	43	....

Daily discharge, in second-feet, of Blaine Creek at Yatesville, Ky., for the years ending September 30, 1915-1918—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
1	27	22	47	252	800	2,820	264	112	555	160	18	239
2	18	21	43	204	525	1,080	304	88	2,520	48	19	181
3	17	20	42	880	290	2,870	465	77	2,340	46	19	1,040
4	16	24	38	1,200	590	2,200	331	64	730	35	17	405
5	14	24	181	1,980	435	1,240	465	72	435	28	15	150
6	13	21	34	2,070	465	840	1,840	64	331	29	13	24
7	12	21	25	1,040	405	1,320	960	65	345	28	15	375
8	15	21	123	405	317	2,770	555	60	264	28	19	3,320
9	11	20	83	331	304	1,280	465	66	264	54	10	1,800
10	12	24	98	252	215	660	317	60	277	31	9	1,360
11	10	21	83	227	277	465	290	54	304	28	10	465
12	10	30	69	181	277	2,920	264	72	227	20	13	43
13	19	22	79	160	277	2,160	290	80	181	19	7	19
14	16	21	54	375	114	1,940	252	66	123	24	12	17
15	16	20	38	625	150	800	204	59	114	21	12	17
16	12	21	43	960	227	590	141	48	96	28	7	19
17	13	18	51	1,080	525	1,400	170	43	72	34	3.5	15
18	12	17	69	960	660	960	150	39	66	48	6	15
19	239	18	91	800	555	590	141	36	54	62	8	19
20	405	15	43	730	1,160	465	132	35	204	150	13	15
21	304	18	435	1,320	1,040	1,440	123	32	170	100	12	12
22	141	21	1,710	5,960	465	1,240	123	27	88	114	12	24
23	80	21	625	1,440	555	1,120	110	33	66	105	15	17
24	65	24	375	660	2,200	5,080	88	40	39	56	15	24
25	48	46	264	495	1,040	1,280	77	30	48	181	12	15
26	38	39	204	375	590	730	85	27	46	252	27	15
27	39	37	192	304	465	590	73	83	43	96	12	30
28	36	30	2,200	304	2,430	525	91	2,200	141	94	12	155
29	28	73	1,200	331	....	435	105	1,040	405	54	10	104
30	25	54	800	360	....	360	181	405	181	35	10	60
31	26	....	555	331	....	317	....	290	....	21	12	....
1917-18												
1	252	252	24	800	525	277	192	150	34	290	54	24
2	150	204	43	730	375	227	150	132	96	227	43	21
3	96	114	30	465	331	204	555	110	54	114	34	21
4	66	88	39	375	317	304	555	100	96	66	30	24
5	27	88	42	405	331	465	345	96	60	60	27	21
6	17	66	44	465	345	465	264	86	34	54	24	19
7	15	60	39	525	405	465	264	80	80	43	21	19
8	12	73	43	465	590	405	1,530	86	264	66	24	17
9	12	48	38	525	1,530	304	1,120	83	192	60	27	17
10	15	34	59	405	1,200	277	590	69	54	54	43	21
11	24	48	80	465	800	252	495	74	34	43	34	19
12	80	38	30	465	590	252	405	82	30	48	27	19
13	38	30	28	405	405	880	360	360	27	43	30	17
14	96	48	30	435	331	880	290	1,040	27	38	27	21
15	66	38	33	695	277	1,200	264	405	24	34	34	27
16	66	38	35	960	227	525	239	239	21	30	27	17
17	80	48	28	880	181	405	239	264	19	34	38	21
18	48	30	35	800	170	277	264	495	21	30	54	43
19	2,770	38	33	625	264	304	204	252	21	34	43	21
20	1,200	30	28	360	1,710	277	192	465	21	27	34	54
21	465	27	33	360	880	317	435	465	17	28	30	27
22	331	24	123	405	660	405	375	239	96	27	27	24
23	252	24	192	405	590	304	277	160	114	30	24	27
24	123	24	204	405	405	317	239	141	38	29	24	27
25	123	24	405	405	375	800	215	105	34	30	21	21
26	123	27	960	405	465	525	192	123	1,400	38	21	19
27	27	24	800	1,200	465	405	204	141	345	660	24	21
28	43	36	660	4,420	331	304	181	88	192	114	27	17
29	88	41	730	4,070	....	252	192	88	132	66	21	17
30	317	30	800	1,120	....	239	170	88	114	80	24	21
31	304	....	695	695	....	215	....	60	....	54	27	....

Monthly discharge of Blaine Creek at Yatesville, Ky., for the years ending September 30, 1915-1920.

(Drainage area, 216 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1915					
June	1,440	13	143	0.662	0.74
July	2,820	27	338	1.56	1.80
August	405	21	103	.477	.55
September	105	12	30.2	.140	.16
1915-16					
October	3,220	27	309	1.43	1.65
November	3,420	24	348	1.61	1.80
December	6,290	66	850	3.94	4.54
January	4,530	239	776	3.59	4.14
February	2,020	227	574	2.66	2.87
March	3,920	170	643	2.98	3.44
April	1,530	114	310	1.44	1.61
May	1,360	36	207	.958	1.10
June	2,670	34	219	1.01	1.13
July	239	13	34.8	.101	.19
August	2,430	10	261	1.21	1.40
September	132	13	35.0	.162	.18
The year	6,290	10	381	1.76	24.05
1916-17					
October	405	10	56.0	0.259	0.30
November	73	15	26.1	.121	.14
December	2,200	25	319	1.48	1.71
January	5,960	160	858	3.97	4.58
February	2,430	114	620	2.87	2.99
March	5,080	317	1,370	6.34	7.31
April	1,840	73	302	1.40	1.56
May	2,200	27	176	.815	.94
June	2,520	39	358	1.66	1.85
July	252	19	65.5	.302	.35
August	27	3.5	12.7	.059	.07
September	3,320	12	333	1.54	1.72
The year	5,960	3.5	374	1.73	23.52
1917-1918					
October	2,770	12	236	1.09	1.26
November	252	24	56.5	.262	.29
December	960	24	205	.949	1.09
January	4,420	360	811	3.75	4.32
February	1,710	170	538	2.49	2.59
March	1,200	204	411	1.90	2.19
April	1,530	150	367	1.70	1.90
May	1,040	60	205	.949	1.09
June	1,400	17	123	.569	.63
July	660	27	82.3	.381	.44
August	54	21	30.5	.141	.16
September	54	17	22.8	.106	.12
The year	4,420	12	256	1.19	16.08

Monthly discharge of Blaine Creek at Yatesville, Ky., for the year ending September 30, 1915-1920—Continued.

Month	Discharge in Second-feet.				Run-off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1918-19					
October	660	13	46.8	0.217	0.25
November	215	27	50.0	.231	.26
December	660	27	179	.829	.96
January	6,620	290	803	3.72	4.29
February	880	150	296	1.37	1.43
March	1,940	170	592	2.74	3.16
April	590	170	287	1.33	1.48
May	5,020	114	784	3.63	4.18
June	192	21	73.0	.338	0.38
July	96	8	23.3	.108	.12
August	170	10	41.0	.190	.22
September	96	13	33.7	.156	.17
The year	6,620	8	269	1.25	16.90
1919-20					
October	1,660	17	358	1.66	1.91
November	6,460	114	890	4.12	4.60
December	7,220	170	1,180	5.46	6.30
January	7,720	170	1.490	6.90	7.96
February	1,840	192	438	2.03	2.19
March	5,680	239	989	4.58	5.28
April	4,370	215	876	4.06	4.53
May	695	80	295	1.37	1.58
June	1,840	66	469	2.17	2.42
July	239	54	94.2	.436	.50
August	114	43	69.6	.322	.37
September	114	34	58.7	.272	.30
The year	7,720	17	601	2.78	37.94

CHAPTER V.

LICKING RIVER BASIN RECORDS.

LICKING RIVER AT FARMERS, KY.

LOCATION.—About 100 feet below Chesapeake & Ohio Railway bridge and about 300 feet below two-span steel highway bridge, three-fourths of a mile west of Farmers, Rowan County.

DRAINAGE AREA.—768 square miles (measured by United States Engineer Corps).

RECORDS AVAILABLE.—July 20, 1915, to June 30, 1920, when station was discontinued.

GAGE.—Combination vertical staff and slope gage on east bank of river.

DISCHARGE MEASUREMENTS.—Made from downstream side of two-span highway bridge 300 feet above gage.

CHANNEL AND CONTROL.—Bed of stream solid rock, straight above and below gage. Control is a rock reef about 1 mile below gage.

EXTREMES OF STAGE.—1915-1920: Maximum stage recorded 26.0 feet at 4 P. M. December 7, 1919; minimum stage 1.1 feet August 17 and 18, 1917.

ICE.—Stage-discharge relation not affected by ice except during extreme winters.

REGULATION.—The flow at low stages may be affected by storage of water for use of a sawmill at a movable dam a short distance above the gage. Dam is submerged at gage height 5 feet.

ACCURACY.—Stage-discharge relation probably permanent; affected by ice several days in winter of 1919-20. Rating curve not yet determined. Gage read to half-tenths twice daily. Gage readings less than 5 feet are questionable on account of error in gage.

COOPERATION.—Records furnished by United States Engineer Corps.

No discharge measurements made since 1915.

Discharge measurements of Licking River at Farmers, Ky., during 1915.

Date	Made by—	Gage Height	Discharge	Date	Made by—	Gage Height	Discharge
		Ft.	Sec.-ft.			Ft.	Sec.-ft.
1915 July 19	Crosley and Daubenspeck	2.76	337	July 22	Crosley and Daubenspeck	6.07	2,050
21	Crosley and Daubenspeck	5.05	1,430	23	Crosley and Daubenspeck	4.65	1,240
21	Crosley and Daubenspeck	5.40	1,600	Nov. 9	H. R. Daubenspeck	1.7	98.6
22	Crosley and Daubenspeck	6.54	2,370				

Daily gage height, in feet, of Licking River at Farmers, Ky., for the years ending September 30, 1915-1920.

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1915				1915				1915			
1	....	3.92	1.85	11	....	1.74	1.72	21	....	2.45	1.52
2	....	2.95	1.82	12	....	1.7	1.8	22	6.2	3.22	1.53
3	....	2.6	1.72	13	....	2.06	1.75	23	4.2	2.7	1.65
4	....	3.22	1.55	14	....	2.25	1.5	24	3.24	2.37	1.95
5	....	2.75	1.72	15	....	1.67	1.55	25	2.79	2.3	1.8
6	....	2.75	1.96	16	....	2.5	1.57	26	2.5	2.35	1.65
7	....	2.51	2.37	17	....	2.17	1.47	27	2.3	2.15	1.55
8	....	1.95	2.3	18	....	2.48	1.38	28	2.15	1.97	1.5
9	....	1.86	2.1	19	....	3.6	1.9	29	2.05	1.92	1.45
10	....	1.8	1.92	20	....	2.77	1.6	30	2.0	1.87	1.45
								31	2.12	1.85	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	7.6	1.9	....	11.1	17.0	4.76	13.1	3.72	3.45	2.72	1.87	2.07
2	10.7	1.85	3.75	9.9	13.5	5.6	5.93	3.47	2.99	2.16	1.89	3.33
3	7.4	1.85	3.6	7.7	8.88	6.88	5.35	3.47	2.75	2.09	1.8	3.81
4	4.3	1.8	3.4	6.3	6.73	6.7	4.95	9.8	2.67	2.07	1.89	3.38
5	4.1	1.75	3.25	5.6	6.13	6.35	4.6	9.2	2.57	1.99	1.83	2.89
6	3.9	1.75	3.05	6.1	6.5	5.7	4.34	5.88	2.47	1.99	1.92	2.46
7	4.7	1.7	2.95	6.2	6.98	7.4	4.12	4.78	3.2	1.92	1.99	2.33
8	3.7	1.7	2.75	6.3	6.7	10.0	4.68	4.54	3.54	1.89	2.84	2.16
9	3.0	1.7	2.75	6.2	6.23	8.2	8.15	4.2	3.15	1.89	2.41	2.16
10	2.7	1.65	2.6	7.2	6.43	6.2	9.7	3.79	2.99	1.87	2.5	2.13
11	2.50	1.65	2.55	11.7	6.98	4.49	10.2	3.49	3.52	1.83	3.38	2.13
12	2.35	1.65	2.75	20.6	6.23	4.64	7.65	3.3	3.72	1.89	3.2	2.04
13	2.25	1.7	3.2	21.4	12.6	4.38	6.5	3.1	3.74	1.99	4.3	1.90
14	2.15	1.75	3.75	20.4	9.08	4.26	5.4	2.91	2.94	1.92	4.2	1.92
15	2.07	2.3	3.85	16.1	6.98	4.47	4.86	2.84	4.84	1.89	4.2	2.21
16	2.03	10.0	5.0	8.6	6.45	4.66	4.54	2.75	6.23	2.02	10.3	2.26
17	1.95	14.0	21.0	6.18	6.0	4.84	4.36	2.65	7.48	2.16	11.1	2.12
18	1.95	10.5	24.5	5.9	5.7	4.88	4.1	2.55	5.53	3.65	5.4	2.02
19	2.0	5.3	23.7	4.58	5.3	4.84	3.91	2.47	18.4	2.52	3.86	1.99
20	5.6	8.0	22.0	4.5	4.73	4.55	3.69	2.41	19.5	3.28	3.62	1.89

Daily gage height, in feet, of Licking River at Farmers, Ky., for the years ending September 30, 1915-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
21	4.2	9.15	19.2	4.58	4.5	4.62	3.52	2.31	9.63	4.41	4.17	1.83
22	3.5	6.4	10.0	6.4	4.15	4.7	3.43	2.28	4.7	4.31	3.79	1.8
23	3.0	5.1	5.4	8.03	4.0	4.49	3.33	2.36	3.98	3.74	3.1	1.8
24	2.7	4.1	4.7	7.3	4.45	4.37	3.2	2.62	3.45	2.91	2.82	1.7
25	2.48	3.7	4.8	6.4	5.8	4.01	3.15	2.52	4.1	2.47	2.75	1.7
26	2.43	3.4	6.0	5.48	6.15	3.86	3.2	2.38	2.99	2.23	2.55	1.73
27	2.25	3.12	6.6	4.83	6.15	9.3	3.67	2.26	2.75	2.05	3.01	1.7
28	2.2	3.9	8.2	4.45	5.35	18.8	4.27	2.12	2.6	2.07	2.28	1.75
29	2.13	6.2	17.4	4.78	5.0	21.5	4.17	2.09	2.5	2.13	2.26	1.8
30	2.05	4.55	20.7	12.3	....	20.5	3.93	2.52	2.36	1.99	2.16	1.65
31	2.98	....	18.1	8.0	....	17.7	....	3.96	....	1.97	2.09	....
1916-17												
1	1.75	2.09	2.45	4.76	5.45	19.00	4.49	3.28	5.50	2.47	1.83	1.42
2	2.12	2.02	2.41	4.34	6.50	17.60	5.28	3.90	10.80	2.25	1.77	1.18
3	2.02	1.99	2.38	5.78	6.10	16.55	6.82	2.99	13.85	2.15	1.77	1.38
4	1.92	1.96	2.35	10.82	4.70	18.82	5.92	2.84	10.52	1.96	1.75	1.20
5	1.94	1.96	5.25	15.75	3.83	18.12	5.70	2.77	6.95	1.85	1.58	1.20
6	1.80	1.89	4.03	18.45	3.72	14.55	14.60	2.70	5.05	1.77	1.48	1.32
7	1.70	1.89	3.40	17.10	3.67	10.90	14.15	2.62	5.60	1.75	1.38	1.45
8	1.73	4.15	3.28	11.05	4.01	16.20	10.28	2.60	5.08	1.77	1.38	3.92
9	1.70	1.83	3.03	5.95	4.30	17.98	6.65	2.54	4.68	1.73	1.52	5.78
10	1.67	1.92	2.89	4.95	4.28	15.10	5.60	2.60	5.60	1.70	1.38	3.90
11	1.65	1.87	2.74	4.60	3.81	10.45	4.90	2.64	4.49	1.75	1.30	2.60
12	1.87	1.92	2.67	4.12	3.51	16.82	4.49	2.72	4.15	1.89	1.28	1.98
13	1.83	2.06	2.57	3.79	3.81	17.25	4.34	2.72	3.67	1.83	1.35	1.68
14	1.77	2.09	2.47	3.77	3.30	16.95	4.47	2.62	3.35	1.85	1.32	1.55
15	1.80	2.02	2.28	3.86	3.77	12.72	4.17	2.54	3.25	1.92	1.35	1.42
16	1.77	1.99	2.50	3.93	4.93	9.00	3.67	2.47	3.12	1.87	1.18	1.32
17	1.73	1.96	2.31	4.84	7.88	9.80	3.61	2.38	2.93	2.21	1.12	1.60
18	1.75	1.89	2.54	4.24	8.10	11.38	3.38	2.52	2.72	2.12	1.12	1.52
19	2.21	1.87	2.52	4.62	6.78	9.78	3.49	2.23	2.54	2.47	1.35	1.45
20	5.05	1.89	2.28	3.96	6.70	6.78	3.18	2.31	7.95	2.80	1.25	1.42
21	5.55	1.87	2.70	7.98	9.70	11.05	2.99	2.60	4.06	2.72	1.32	1.38
22	4.27	1.87	7.82	24.00	8.98	12.05	2.93	2.04	3.01	2.80	1.45	1.40
23	3.40	1.94	9.85	22.92	6.68	9.42	2.91	2.45	2.70	2.50	1.58	1.45
24	3.01	2.60	6.62	20.18	10.00	18.98	2.80	2.64	2.54	2.43	1.48	1.65
25	2.74	2.72	4.84	12.00	12.55	18.62	2.70	2.52	2.45	3.01	1.40	1.78
26	2.54	2.62	4.26	5.98	13.00	15.25	2.67	2.21	2.21	4.78	1.20	1.80
27	2.50	2.45	4.68	5.10	7.62	8.42	2.62	10.40	2.06	4.06	1.35	1.50
28	2.38	2.38	12.52	4.72	12.30	6.78	2.54	18.38	4.44	2.38	1.42	1.88
29	2.25	2.33	14.95	4.78	....	6.02	2.77	20.75	3.03	2.31	1.40	3.22
30	2.18	2.47	11.72	4.98	....	5.32	3.49	16.92	2.72	1.94	1.48	....
31	1.92	....	7.32	4.92	....	4.82	....	7.55	....	1.89	1.50	....
1917-18												
1	2.80	4.32	2.72	3.55	18.60	4.32	3.65	4.68	2.50	2.42	1.78	1.85
2	2.70	3.55	2.60	3.38	13.05	4.05	3.92	4.20	2.42	2.38	1.72	1.80
3	2.12	2.90	2.38	3.82	9.75	3.88	5.10	3.82	2.35	2.28	1.68	1.92
4	1.88	2.78	2.20	3.82	8.65	3.75	5.32	3.68	2.45	2.22	1.62	2.18
5	1.78	2.60	2.05	3.88	8.28	5.02	4.60	3.18	2.32	2.12	1.50	2.30
6	1.72	2.45	2.05	3.30	7.25	6.48	3.62	3.05	2.50	2.08	1.45	2.05
7	1.62	2.36	1.98	8.35	6.80	7.18	3.70	2.98	2.82	1.98	1.52	2.05
8	1.50	2.20	2.05	8.62	10.02	6.50	5.30	2.85	2.72	2.20	1.50	2.10
9	1.42	2.18	2.12	7.92	16.15	6.48	8.45	2.70	2.68	2.45	1.40	2.00
10	1.55	2.50	2.22	7.15	17.20	4.55	9.40	2.98	2.58	2.72	1.35	1.92
11	1.52	2.50	2.28	6.22	14.85	4.65	7.15	2.90	2.48	2.78	1.30	1.82
12	1.62	2.35	2.12	6.05	12.72	4.38	5.75	3.08	2.32	2.52	1.35	1.72
13	1.72	1.95	2.22	6.00	8.70	7.15	4.80	6.60	2.20	2.10	1.32	1.82

NOTE.—No gage height furnished for Sept. 30.

Daily gage height, in feet, of Licking River at Farmers, Ky., for the years ending September 30, 1915-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
14	1.88	1.88	2.12	5.50	5.45	14.00	3.90	13.20	2.05	1.68	1.30	1.72
15	1.95	1.78	2.10	7.22	5.05	8.82	3.95	8.78	1.92	1.55	1.25	1.60
16	1.82	1.70	2.00	9.95	4.88	6.45	3.88	6.58	1.82	1.78	1.25	1.80
17	1.72	1.65	1.95	8.68	4.78	5.32	3.70	5.10	1.72	1.68	1.30	2.48
18	1.72	1.60	1.98	7.45	4.72	4.70	3.42	4.20	1.68	1.82	1.35	2.00
19	3.70	1.50	2.00	6.68	5.05	4.88	3.28	4.02	1.78	1.88	1.70	2.18
20	7.38	1.48	2.25	6.28	8.58	4.88	3.60	3.90	1.92	1.68	1.62	2.15
21	1.68	1.70	2.58	6.38	11.38	4.78	11.25	5.40	2.05	1.58	1.55	2.00
22	4.85	1.68	2.82	5.70	10.58	4.68	7.75	5.80	2.82	1.48	1.48	2.08
23	3.28	1.68	2.72	5.18	6.25	3.68	5.48	6.20	2.38	1.38	1.42	1.98
24	2.80	1.58	2.85	5.25	5.42	4.32	4.85	6.05	2.25	1.38	1.38	1.88
25	2.75	1.52	4.10	5.32	5.12	5.75	4.55	6.45	2.80	1.48	1.32	1.78
26	2.45	1.60	5.25	5.65	5.52	7.65	10.18	6.00	5.65	1.52	1.28	1.68
27	2.18	1.45	5.42	8.25	5.38	6.72	12.28	4.30	3.25	1.62	1.30	1.58
28	2.48	1.38	4.65	13.80	4.95	5.48	6.58	4.00	2.20	2.15	1.42	1.52
29	2.68	2.20	4.00	20.70	....	4.98	5.75	3.65	....	1.45	1.72	1.48
30	3.52	2.68	3.42	21.28	....	4.20	4.98	3.15	1.98	3.00	1.72	1.40
31	4.52	....	3.52	21.12	....	3.88	....	2.72	....	2.65	1.82	....
1918-19												
1	1.48	3.42	1.68	19.50	3.28	5.50	4.38	4.75	4.05	2.55	2.25	1.65
2	1.42	3.50	1.62	24.30	3.30	5.20	4.02	7.80	3.60	2.40	2.05	1.95
3	1.35	3.38	1.58	21.70	2.88	4.70	3.50	4.60	3.20	2.15	2.05	2.05
4	1.35	2.30	1.65	18.65	2.90	4.35	3.25	4.88	3.25	1.85	2.35	1.65
5	1.30	2.22	1.78	10.20	3.00	4.80	3.18	4.35	2.95	2.40	2.30	1.95
6	1.32	2.15	1.90	5.60	2.85	8.60	4.32	4.42	2.85	2.25	2.15	1.75
7	1.42	2.05	2.05	4.55	2.58	8.40	3.80	5.20	2.75	2.15	1.85	1.85
8	1.38	1.98	1.98	4.35	2.55	6.75	3.35	7.55	2.75	2.05	2.05	1.70
9	1.30	1.88	2.15	4.15	2.48	11.90	3.35	15.25	3.30	2.30	2.35	1.65
10	1.35	1.80	2.28	4.12	2.55	9.50	3.62	21.50	2.75	2.90	1.85	1.60
11	1.45	1.72	2.60	3.88	2.48	7.65	3.92	16.80	2.70	2.25	1.75	1.55
12	1.48	1.62	2.45	3.60	2.40	5.72	4.15	9.65	2.60	2.05	1.85	1.50
13	1.42	1.58	2.62	3.45	2.35	4.70	4.85	6.30	2.45	2.10	1.55	1.55
14	1.42	1.65	3.25	3.52	2.80	4.18	4.40	5.90	2.15	1.95	1.60	1.50
15	1.48	1.70	5.95	3.48	3.00	3.83	4.05	6.45	2.55	1.95	3.55	1.40
16	1.48	1.78	4.60	3.60	3.05	4.28	4.38	5.40	2.30	2.10	3.00	1.50
17	1.48	1.82	3.98	3.75	3.25	4.10	5.22	4.80	2.35	1.75	2.05	1.55
18	1.52	1.98	3.88	3.58	3.38	3.95	4.65	4.50	2.25	2.15	1.85	1.55
19	1.55	2.30	3.62	3.68	3.30	3.85	4.40	4.50	2.25	1.75	2.05	1.70
20	1.52	2.52	3.10	5.22	3.42	3.80	3.88	4.35	2.15	2.05	1.90	1.40
21	1.58	2.58	3.22	4.50	3.68	3.78	3.72	7.85	2.05	1.85	2.15	2.75
22	1.52	2.38	3.35	3.68	3.95	3.68	3.60	8.20	2.05	1.85	2.50	2.05
23	1.52	2.30	5.32	3.90	3.92	3.38	3.50	6.40	2.15	1.65	2.45	2.90
24	1.50	2.18	5.45	7.30	4.28	3.25	3.68	6.50	2.15	2.20	2.10	2.75
25	1.55	2.10	5.62	7.60	5.12	3.20	3.70	12.55	2.50	2.15	2.00	2.95
26	1.60	1.98	5.60	5.98	5.2	3.10	3.50	9.15	3.60	2.00	1.85	2.75
27	1.62	1.92	4.60	4.75	5.32	3.30	3.48	6.85	3.80	2.00	1.85	2.35
28	1.72	1.88	3.40	4.48	5.45	4.10	3.52	6.20	2.90	1.90	2.15	1.85
29	1.82	1.78	3.05	3.98	....	4.50	3.42	5.75	2.30	1.95	1.75	1.85
30	2.10	1.70	2.90	3.58	....	4.75	3.55	4.70	2.30	2.25	2.70	1.80
31	2.70	....	2.90	3.35	....	4.65	....	Int.	....	2.10	2.25	....

Daily gage height, in feet, of Licking River at Farmers, Ky., for the years ending September 30, 1915-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June
1919-20									
1	1.80	11.15	5.10	3.3	4.45	4.05	4.00	4.80	2.85
2	1.75	22.75	4.85	3.25	4.30	4.15	6.55	4.55	2.90
3	1.85	21.05	4.65	3.0	3.85	4.40	8.00	4.25	6.20
4	1.65	19.00	3.75	2.75	3.75	4.55	9.50	3.80	4.60
5	1.75	13.35	3.60	2.85	3.95	5.80	14.65	3.62	12.20
6	1.65	5.35	6.60	2.95	3.85	5.25	11.50	3.45	8.55
7	1.75	4.30	25.50	3.2	3.60	4.85	10.95	3.40	6.75
8	1.85	3.70	23.30	9.3	3.55	4.45	10.65	5.95	4.75
9	1.90	3.75	23.15	23.3	3.35	4.20	8.30	5.75	4.20
10	1.85	3.90	22.25	24.45	3.40	4.35	6.30	4.85	3.60
11	1.95	3.80	16.85	22.5	3.50	4.45	5.45	4.25	3.10
12	1.55	3.90	9.00	19.1	3.45	5.35	4.75	4.05	4.35
13	7.60	3.95	13.90	8.4	3.60	5.65	4.70	4.25	3.80
14	5.85	3.65	21.95	6.0	3.55	5.60	4.65	4.15	3.20
15	6.20	3.55	20.80	4.6	3.55	5.75	4.30	3.80	2.95
16	6.55	3.45	18.45	4.2	3.25	6.20	3.95	3.55	2.75
17	9.45	3.05	9.80	4.25	3.10	16.15	3.80	3.45	2.65
18	8.15	3.05	7.20	4.35	3.00	11.75	4.40	3.20	2.55
19	4.95	2.85	6.00	3.95	3.15	19.40	4.85	3.20	2.45
20	3.85	2.75	4.90	4.1	3.35	21.30	12.00	3.10	2.45
21	3.25	2.55	4.65	5.2	3.80	18.85	21.75	3.10	2.75
22	3.00	2.55	4.45	15.45	8.85	13.45	15.75	3.00	3.65
23	2.75	2.45	4.25	19.8	11.45	7.65	8.10	2.95	4.00
24	2.90	2.35	4.05	23.8	9.40	5.35	5.65	2.95	3.25
25	3.10	2.45	3.75	22.6	7.05	5.25	4.75	3.60	2.75
26	3.20	14.20	3.55	18.15	5.15	4.65	5.00	3.55	2.55
27	5.00	22.40	3.45	13.05	4.70	4.25	6.80	3.40	2.25
28	4.45	19.30	3.45	10.95	4.45	4.05	7.80	3.15	2.00
29	3.65	10.10	3.25	6.15	4.10	3.95	6.10	2.80	1.85
30	3.10	7.05	3.40	4.85	....	3.65	5.30	2.60	2.10
31	2.75	....	3.40	4.60	....	3.45	....	2.60	*

*Record discontinued.

NOTE.—Stage-discharge relation probably affected by ice from about Dec. 19, 1919, to Jan. 9, 1920, Jan. 15 to 22 and Feb. 1 to 24, 1920.

LICKING RIVER AT FALMOUTH, KY.

LOCATION.—At two-span highway bridge at junction of Milford Pike and West Ferry Street, Falmouth, Pendleton, County, about 500 feet above mouth of South Fork.

DRAINAGE AREA.—3,240 square miles (including South Fork).

RECORDS AVAILABLE.—January 1, 1914 to July 31, 1916, when station was discontinued.

GAGE.—United States Weather Bureau chain gage attached to downstream side of bridge. Read by Jesse Oldham. Elevation of zero of gage, 512.17 feet.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge or by wading.

CHANNEL AND CONTROL.—The low-water control is between the gage and the mouth of South Fork. For stages above 2.6 feet the gage height is an index of the flow below the mouth of South Fork.

EXTREMES OF DISCHARGE.—1914-1916: Maximum stage recorded 31.0 feet December 18, 1915 (discharge about 56,800 second feet); minimum stage recorded 1.0 foot July 11-16 and September 30, 1914 (discharge not known, as no record is available as to flow of South Fork on those dates.

ACCURACY.—Stage-discharge relation practically permanent for medium and high stages; not affected by ice during year. Rating curve is well defined between 1,000 and 32,000 second feet, when the gage height is an index of the flow below mouth of South Fork as noted under "Channel and Control." For stages below 2.6 feet a fairly well defined rating curve was used. Gage read twice daily to hundredths. For stages above 2.6 feet the daily discharge below the mouth of South Fork was ascertained by applying mean daily gage heights to rating table: For stages below 2.6 feet, daily discharges below mouth of South Fork ascertained by adding together the flow of Licking River and of South Fork as given by fairly-well defined rating curves. Results good above 1,000 second feet, fairly good below 1,000 second feet.

COOPERATION.—Gage height record and results of discharge measurements furnished by United States Army Engineers.

Discharge measurements of Licking River at Falmouth, Ky., during the years ending September 30 1914-1916.

Date	Made by—	Gage Height	Discharge in Second-feet		
			Licking River Above Mouth of South Fork*	South Fork†	Below Mouth of South Fork
1914		Feet			
May 30	Ellsworth and Adams	1.70	291	....	....
Aug. 15	Ellsworth and Streeter	1.47	146	....	....
Dec. 30	Tarbett & Roth	7.82	7,100	....	....
1915					
Jan. 25	Streeter & Roth	9.30	9,460	....	....
July 28	Crosley & Daubenspeck	2.25	509	....	....
Sept. 9	H. R. Daubenspeck	3.18	945	824	1,770
Oct. 4	Crosley & Daubenspeck	6.44	5,540	1,460	7,000
5	Crosley & Daubenspeck	5.22	3,790	1,180	4,970
Nov. 8	Crosley & Daubenspeck	1.6	203	....	....
1916					
Jan. 31	Crosley & Shepard	18.00	18,300	11,000	29,300
Feb. 1	A. C. Shepard	16.82	17,700	9,100	26,800
2	A. C. Shepard	15.75	16,700	8,300	25,000
2	A. C. Shepard	14.9	17,300	7,000	24,300
3	A. C. Shepard	12.56	14,700	3,400	18,100
4	A. C. Shepard	9.00	10,100	2,000	12,100
5	A. C. Shepard	6.3	5,370	1,540	6,910

*Current meter measurement.

†Ascertained from rating curve for South Fork and gage height at that station at time when flow of Licking River above mouth of South Fork was measured by current meter.

Daily gage height, in feet, of Licking River at Falmouth, Ky., for the years ending September 30, 1914-1916.

Day	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1914									
1	4.2	11.0	6.0	7.6	3.9	1.6	1.2	1.3	2.2
2	4.0	9.0	4.5	10.0	3.7	1.5	1.2	1.3	2.0
3	3.9	6.6	4.2	9.8	3.5	1.5	1.1	1.2	1.9
4	3.9	7.6	4.0	8.8	3.5	1.5	1.1	1.2	1.7
5	6.6	5.3	4.0	6.6	4.0	2.6	1.1	1.2	1.5
6	4.7	6.1	3.9	6.0	5.0	4.8	1.1	1.2	1.4
7	4.3	9.6	5.2	4.2	9.5	5.2	1.1	1.2	1.4
8	4.3	7.0	5.0	4.2	9.5	3.4	1.1	1.1	1.3
9	4.2	5.5	4.8	4.0	9.0	4.3	1.1	1.1	1.6
10	4.2	5.0	4.4	4.2	8.5	3.5	1.1	1.1	1.5
11	4.1	4.8	5.2	4.5	7.0	2.5	1.0	1.2	1.5
12	4.0	4.0	8.0	4.8	5.6	2.2	1.0	2.5	1.4
13	4.0	3.3	9.0	4.8	4.5	2.1	1.0	2.2	1.4
14	3.0	3.0	9.8	4.6	4.0	2.0	1.0	1.7	1.3
15	2.9	3.0	8.5	3.8	3.5	1.8	1.0	1.5	1.3
10	2.7	3.2	7.5	3.4	3.2	1.7	1.0	1.4	1.2
17	2.5	3.5	6.2	3.4	3.2	1.6	1.5	1.4	1.2
18	2.5	4.5	5.0	3.5	2.8	1.6	1.5	1.3	1.2
19	2.4	23.0	4.5	3.6	2.6	1.5	1.5	1.3	1.2
20	2.4	27.1	4.2	3.6	2.5	1.5	1.5	1.3	1.4
21	2.3	21.5	3.8	3.5	2.4	1.5	1.4	1.8	1.3
22	2.3	15.3	3.7	4.0	2.3	1.4	1.4	1.5	1.3
23	2.2	13.2	3.6	4.5	2.2	1.3	1.4	1.3	1.2
24	2.2	7.5	3.5	4.0	2.1	1.3	1.3	1.3	1.3
25	3.0	4.7	3.5	3.5	2.0	1.3	1.3	1.3	1.4
26	4.1	4.2	3.4	4.5	2.0	1.3	1.3	3.7	1.4
27	4.1	4.0	3.3	4.6	1.9	1.2	1.3	2.4	1.3
28	3.5	3.8	8.6	6.0	1.8	1.2	1.3	2.2	1.2
29	3.2		7.0	5.0	1.7	1.2	1.3	5.8	1.1
30	3.0		9.1	4.0	1.7	1.2	1.3	3.4	1.0
31	9.9		8.2		1.6		1.3	2.6	

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1914-15												
1	1.1	1.7	2.0	8.4	24.5	2.5	2.9	2.4	4.5	2.4	2.1	3.4
2	1.2	1.7	1.8	6.6	24.6	2.4	2.8	2.5	4.6	3.0	2.7	2.8
3	1.2	1.7	1.5	5.0	17.9	2.4	2.7	5.7	9.7	5.2	2.6	2.5
4	1.1	1.6	5.5	3.8	13.9	2.3	2.6	3.7	9.0	6.1	4.8	2.2
5	1.1	1.6	4.3	3.5	12.5	3.5	2.5	3.7	6.8	7.0	4.8	2.3
6	1.1	1.6	4.5	3.2	12.9	9.7	2.5	3.8	4.2	6.2	3.9	5.0
7	1.1	1.5	4.1	7.5	9.4	10.7	2.4	3.5	3.6	5.4	3.0	3.5
8	1.1	1.5	3.8	8.2	7.2	8.9	2.4	5.8	3.2	22.5	2.6	3.9
9	1.1	1.5	3.3	7.5	5.3	7.0	2.3	5.5	3.0	9.6	2.3	3.2
10	1.1	1.4	3.0	6.0	4.8	4.9	2.3	3.9	3.5	12.5	2.1	3.1
11	1.2	1.4	2.9	4.5	4.5	4.5	2.3	3.5	5.0	18.3	2.2	2.7
12	1.5	1.4	2.8	7.6	4.3	4.3	2.3	2.9	5.6	11.5	2.0	2.5
13	1.7	1.4	2.7	10.6	4.0	4.0	2.3	2.6	3.9	5.4	2.6	2.3
14	2.0	1.4	2.6	9.9	3.5	3.5	2.5	2.5	3.5	5.0	2.2	2.1
15	8.2	1.4	2.5	8.4	3.3	3.1	2.6	2.4	4.6	4.5	2.2	2.0
16	15.5	1.4		6.7	3.3	3.1	2.5	2.0	3.6	4.0	2.9	1.9
17	10.5	1.4		5.7	3.3	3.1	2.4	2.2	3.6	3.7	2.6	1.8
18	11.2	1.3		5.0	3.3	3.0	2.4	2.1	3.6	3.5	5.5	1.7
19	7.2	1.3	2.2	6.8	3.3	3.0	2.4	2.1	3.5	3.2	4.0	1.7
20	4.9	1.3	5.9	9.4	3.2	3.4	2.3	2.0	3.5	2.7	3.8	2.2

Daily gage height, in feet, of Licking River at Falmouth, Ky., for the years ending September 30, 1914-1916—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1914-15												
21	3.6	1.3	14.8	9.2	3.1	3.6	2.3	2.0	3.9	2.4	4.1	2.0
22	3.2	1.3	14.7	7.5	2.9	4.0	2.2	3.1	2.9	2.2	3.7	1.8
23	2.8	1.3	11.3	8.8	2.9	4.3	3.0	6.8	2.8	2.2	3.7	1.7
24	2.5	1.3	8.7	9.7	2.8	4.0	2.5	4.8	2.5	2.1	3.9	1.6
25	2.3	1.3	6.2	9.6	2.8	3.6	2.4	4.7	2.3	3.1	5.2	1.6
26	2.2	1.3	4.0	7.2	2.7	3.3	2.4	7.7	2.2	3.0	4.8	1.5
27	2.1	1.3	3.8	5.5	2.6	3.2	2.4	11.4	2.0	2.4	3.6	1.5
28	2.0	1.3	3.6	4.5	2.5	3.1	2.4	8.2	1.9	2.3	3.0	1.7
29	1.9	1.3	3.5	4.0		3.1	2.4	7.0	2.0	2.2	2.6	1.6
30	1.8	1.8	8.7	3.7		3.0	2.3	6.0	5.0	2.2	2.5	1.5
31	1.8		9.8	4.3		2.9		4.5		2.0	2.7	

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1915-16										
1	2.27	1.66	3.88	13.1	16.8	4.30	13.0	3.41	3.19	2.21
2	11.4	1.61	3.47	13.1	15.4	4.16	10.6	3.15	2.98	2.09
3	9.90	1.56	3.23	10.8	12.3	4.52	6.45	3.03	2.85	1.98
4	6.88	1.51	3.13	8.4	9.04	5.39	4.8	4.62	2.61	1.80
5	4.40	1.50	3.0	6.3	6.49	5.34	4.25	5.71	2.4	1.81
6	3.55	1.60	2.86	7.4	5.91	5.53	3.93	6.85	2.69	1.66
7	3.12	1.60	2.73	6.5	6.37	10.5	3.66	5.26	3.75	1.73
8	3.27	1.62	2.56	6.3	6.33	8.88	3.63	4.01	5.00	1.58
9	3.34	1.62	2.45	5.6	5.91	8.2	5.18	3.56	4.85	1.54
10	2.88	1.65	2.42	6.2	5.45	6.84	6.41	3.31	3.54	1.52
11	2.61	1.65	2.39	14.4	5.34	5.11	6.68	3.09	3.97	1.49
12	2.46	1.65	2.38	24.2	6.23	4.66	6.55	2.86	4.03	1.44
13	2.33	1.62	2.65	26.5	17.4	4.15	6.09	2.71	3.63	1.42
14	2.27	1.80	3.45	22.8	15.5	3.34	5.06	2.58	3.13	1.41
15	2.19	5.32	3.7	16.7	11.2	10.9	4.38	2.48	2.76	1.40
16	2.06	8.06	4.0	14.1	8.10	7.57	3.65	2.39	2.55	1.40
17	2.01	8.67	27.5	10.8	7.4	6.50	3.94	2.33	4.46	1.43
18	1.99	7.37	31.0	6.2	8.05	5.85	3.66	2.23	4.19	1.44
19	1.97	11.2	27.8	4.3	6.98	5.7	3.55	2.14	10.4	2.45
20	2.00	10.3	20.5	4.25	5.66	5.23	3.28	2.09	17.0	2.50
21	1.97	8.90	17.2	4.5	4.93	5.0	3.14	2.05	15.8	3.31
22	3.40	6.52	15.9	7.2	4.43	4.9	3.00	2.02	12.6	3.84
23	3.00	4.68	13.4	9.5	4.07	4.69	2.88	2.04	7.55	3.24
24	2.68	3.76	9.1	8.8	7.3	4.28	2.78	2.00	4.03	3.03
25	2.56	3.31	7.9	6.95	6.58	3.88	2.75	2.00	3.29	2.78
26	2.21	3.00	14.2	5.95	6.6	4.26	2.77	2.00	2.98	2.38
27	1.98	2.92	7.7	4.98	5.74	9.2	2.87	2.01	2.75	2.11
28	1.92	3.00	8.6	4.43	5.17	10.9	3.14	2.03	2.58	1.95
29	1.83	3.92	15.9	5.65	4.73	16.2	3.91	1.96	2.41	1.83
30	1.72	4.15	20.6	21.6		16.4	3.8	2.20	2.38	1.68
31	1.71		16.0	18.3		14.7		2.35		1.63

NOTE.—Dec. 16-18 river frozen and gage not read.

Daily Discharge, in second-feet, of Licking River at Falmouth, Ky., for the years ending September 30, 1915-1916.

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1915			1915			1915		
1	495	1,830	11	598	1,070	21	3,120	1,040
2	1,000	1,070	12	659	1,020	22	2,500	774
3	2,120	1,140	13	829	798	23	2,650	624
4	4,740	858	14	754	654	24	3,120	489
5	4,240	4,740	15	1,200	530	25	5,590	416
6	2,500	3,920	16	1,200	540	26	3,920	349
7	1,340	2,050	17	1,070	416	27	2,350	341
8	1,350	2,350	18	4,740	336	28	1,340	232
9	773	1,690	19	2,650	605	29	878	343
10	663	1,480	20	2,650	1,280	30	1,830	270
						31	2,800	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1915-16										
1	790	289	2,800	19,500	27,000	3,440	19,300	2,050	1,760	772
2	16,100	259	2,120	19,500	24,100	3,280	14,500	1,690	1,480	616
3	13,200	233	1,830	14,900	17,900	3,760	6,950	1,550	1,270	488
4	7,820	210	1,690	10,500	11,600	5,250	4,240	3,920	940	384
5	3,600	207	1,480	6,780	7,120	5,080	3,280	5,760	748	355
6	2,350	242	1,270	8,720	6,100	5,420	2,800	7,640	1,070	289
7	1,620	222	1,140	7,120	6,950	14,400	2,500	5,080	2,650	314
8	1,830	239	952	6,780	6,780	11,400	2,350	2,960	4,570	256
9	1,980	243	860	5,590	6,100	10,200	4,910	2,350	4,240	229
10	1,340	250	810	6,610	5,250	7,640	6,950	1,900	2,200	214
11	940	240	776	22,100	5,080	4,740	7,460	1,620	2,960	200
12	888	242	806	42,500	6,610	4,080	7,290	1,270	2,960	184
13	741	233	1,000	47,400	28,200	3,280	6,440	1,070	2,350	179
14	750	320	2,120	39,600	24,300	1,980	4,740	940	1,600	184
15	668	5,080	2,500	26,800	15,700	15,100	3,600	844	1,140	180
16	603	9,980	2,960	21,500	9,980	9,080	2,350	765	878	158
17	508	11,100	49,400	14,900	8,720	7,120	2,800	717	3,760	182
18	454	8,720	56,800	6,610	9,800	5,930	2,500	610	3,280	212
19	715	15,700	50,100	3,440	8,000	5,760	2,350	515	14,200	726
20	1,180	14,000	34,800	3,280	5,760	4,910	1,900	510	27,400	815
21	1,040	11,400	27,800	3,760	4,400	4,570	1,690	473	24,900	1,900
22	2,050	7,120	25,100	8,360	3,600	4,400	1,480	462	18,500	2,650
23	1,480	4,080	20,100	12,500	3,120	4,080	1,340	534	9,080	1,830
24	1,070	2,650	11,800	11,200	8,540	3,440	1,200	508	2,960	1,550
25	878	1,900	9,620	8,000	7,290	2,800	1,140	476	1,900	1,200
26	620	1,480	8,200	6,270	7,290	3,440	1,140	460	1,480	906
27	456	1,340	9,260	4,570	5,760	12,000	1,270	454	1,140	671
28	396	1,480	10,900	3,600	4,910	15,100	1,690	467	940	483
29	369	2,800	25,100	5,590	4,080	25,700	2,800	434	888	394
30	317	3,280	35,000	37,100	....	26,100	2,650	745	886	320
31	307	....	25,300	30,100	....	22,700	....	781	....	273

NOTE.—Gage height Dec. 26, 1915, believed to be erroneous; discharge interpolated.

Monthly discharge of Licking River at Falmouth, Ky., for the years ending September 30, 1915-1916—Continued.

(Drainage area, 3.240 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1915					
August	5,590	495	2,120	0.654	0.75
September	4,740	232	1,110	.343	.38
1915-16					
October	16,100	307	2,160	.667	.77
November	15,700	207	3,520	1.09	1.22
December	56,800	776	13,700	4.23	4.88
January	47,400	3,280	15,000	4.63	5.34
February	28,200	3,120	10,000	3.09	3.33
March	26,100	1,980	8,260	2.55	2.94
April	19,300	1,140	4,190	1.29	1.44
May	7,640	434	1,600	.494	.57
June	27,400	748	4,810	1.48	1.71
July	2,650	158	617	.190	.22

LICKING RIVER AT CATAWBA, KY.

Location.—About 200 feet below Catawba ford, about one-fourth mile north of Catawba, Pendleton County. Kinkaid Creek enters from right about 1,000 feet below gage.

Drainage Area.—3,300 square miles.

Records Available.—July 14, 1916, to September 30, 1920.

Gage.—Combination slope and vertical staff on south bank of river about 200 feet below the ford; read by G. A. Frank. Elevation of zero of gage is 498.37 feet above sea level, which corresponds approximately to 69 feet on the United States Weather Bureau gage on Ohio River at Cincinnati, Ohio.

Discharge Measuremnts.—Made from cable about 500 feet upstream from gage.

Channel and Control.—Bed of river at cable is mostly ledge rock. The banks are heavily wooded above an elevation of about 7 feet on the gage. The control is a rock bar just below the mouth of Kinkaid Creek; probably permanent.

Extremes of Discharge.—Maximum stage recorded during period of records, 36.9 feet at 6 p. m. April 21, 1920; minimum stage recorded, 0.60 foot October 16, 1919.

ICE.—Stage-discharge relation affected by ice during severe winters.

ACCURACY.—Stage-discharge relation probably permanent; affected by ice during winter months. Rating curve fairly well defined between 110 and 860 second-feet; and well defined above 860 second-feet; below 110 second-feet the curve is an extension. Gage read twice daily to hundredths. Daily discharge ascertained by applying mean daily gage height to rating table. Records excellent for 1916 and 1917. Owing to lack of discharge measurements since 1917, no records of discharge have been computed after that year.

COOPERATION.—Base data furnished by United States Army Engineers. No discharge measurements made at this station since 1917.

Discharge measurements of Licking River at Catawba, Ky., during the year ending September 30, 1917.

(Made by L. M. Crosley.)

Date	Gage height	Discharge	Date	Gage height	Discharge	Date	Gage height	Discharge
1916	Feet	Sec.-ft.	1917	Feet	Sec.-ft.	1917	Feet	Sec.-ft.
Oct. 3	1.26	146	Jan. 9	11.85	12,600	Jan. 24	26.3	39,300
24	3.81	1,520	10	9.07	8,250	24	25.45	38,900
24	3.68	1,460	10	8.48	7,370	25	21.20	29,000
25	3.29	1,080	22	31.95	51,200	25	20.65	29,800
1917			22	31.95	53,200	26	19.00	27,200
Jan. 8	13.55	15,900	23	32.45	54,800	26	18.08	25,000
9	12.25	13,400	24	27.4	42,100	27	14.55	18,200

Daily Gage height, in feet, of Licking River at Catawba, Ky., for the years ending September 30, 1916-1920.

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1916				1916				1916			
1	....	1.15	1.61	11	....	3.64	2.07	21	4.54	3.13	1.09
2	....	1.14	4.10	12	....	3.54	2.02	22	4.07	3.10	1.08
3	....	1.10	....	13	....	3.06	1.20	23	4.07	3.08	1.08
4	....	1.08	5.04	14	1.10	3.06	1.19	24	4.00	3.04	1.06
5	....	1.07	4.04	15	1.08	3.21	1.17	25	3.12	3.03	1.05
6	....	2.56	3.06	16	1.08	5.50	1.13	26	2.71	3.04	1.03
7	....	2.14	4.60	17	1.08	7.10	1.11	27	2.09	2.58	1.03
8	....	2.10	3.06	18	1.08	8.10	1.10	28	2,06	2.09	1.00
9	....	2.59	4.10	19	1.57	7.10	1.14	29	2.04	2.06	1.04
10	....	4.67	2.60	20	3.08	4.60	1.14	30	1.22	2.02	1.12
								31	1.17	2.00	....

Daily Gage height, in feet, of Licking River at Catawba, Ky., for the years ending September 30, 1916-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
1	1.06	1.88	2.20	9.65	6.75	10.85	4.10	3.32	15.25	3.55	2.05	1.52
2	1.06	1.70	2.08	6.45	7.00	15.75	20.78	3.75	12.22	3.75	1.82	1.30
3	1.04	1.62	2.08	14.50	7.18	15.58	16.02	3.48	10.50	3.35	1.68	1.30
4	1.09	1.52	2.12	14.90	6.43	16.82	11.92	3.30	10.45	2.65	1.58	1.15
5	1.10	1.50	2.30	15.70	5.58	18.55	12.75	3.18	10.10	2.35	1.40	1.02
6	1.10	1.50	5.00	16.70	4.65	16.28	19.82	3.00	8.15	2.18	1.40	1.00
7	1.09	1.45	6.42	15.60	4.40	14.98	16.00	2.90	6.58	2.05	1.32	1.02
8	1.06	1.40	4.50	13.90	4.63	16.65	14.10	2.80	8.00	1.95	1.22	11.95
9	1.04	1.35	3.82	12.02	4.65	21.45	11.95	2.72	11.45	1.82	1.18	10.72
10	1.03	1.40	3.35	9.00	4.53	21.02	9.45	2.62	9.50	1.68	1.15	7.22
11	1.02	1.30	3.05	6.55	4.15	18.40	7.65	2.58	7.95	1.62	1.10	5.45
12	1.01	1.30	2.98	5.55	3.73	22.02	6.50	2.60	6.75	1.55	1.02	4.08
13	.99	1.32	2.70	5.05	3.60	26.00	5.85	2.65	5.58	1.42	1.62	3.32
14	.98	1.40	2.58	4.40	3.78	26.30	5.40	2.72	5.52	1.40	1.20	2.78
15	.97	1.48	2.00	4.00	3.78	22.10	5.18	2.70	4.48	2.60	1.25	2.40
16	.98	1.52	3.18	4.65	3.65	16.32	4.95	2.58	4.38	4.92	1.25	2.20
17	.98	1.50	3.62	5.80	4.10	12.60	4.55	2.48	3.95	3.15	1.18	2.00
18	.98	1.48	2.50	4.75	7.25	10.30	4.25	2.38	3.55	2.28	1.08	1.85
19	1.02	1.48	2.45	4.60	9.32	10.75	4.02	2.28	3.28	1.90	1.00	1.65
20	2.02	1.45	2.60	4.90	9.00	9.72	3.78	2.18	3.22	1.75	.95	1.55
21	4.04	1.40	2.45	11.20	8.30	14.75	3.60	2.08	5.52	2.92	.95	1.50
22	5.04	1.35	3.60	32.00	8.00	16.35	3.48	2.00	6.45	4.35	1.05	1.62
23	4.54	1.48	7.45	32.60	10.75	14.00	3.32	1.98	4.25	4.05	1.12	2.08
24	3.58	2.45	8.05	27.45	12.50	17.72	3.25	1.92	3.42	3.72	1.08	1.72
25	8.04	2.10	8.38	21.15	10.98	16.70	3.10	1.90	3.05	3.72	.92	1.52
26	2.58	1.90	8.00	18.58	9.88	15.22	3.02	2.08	2.68	3.22	.90	1.42
27	2.11	2.05	24.15	13.18	10.32	14.70	2.95	26.10	2.48	2.70	.88	1.32
28	2.10	2.45	19.38	7.55	9.58	11.98	2.80	28.95	2.42	3.38	.82	1.32
29	2.18	2.38	16.45	8.62	....	8.95	2.88	21.75	3.80	2.95	.88	1.48
30	2.25	2.35	13.65	7.70	....	7.38	2.95	15.90	4.75	2.52	1.28	1.40
31	2.00	....	11.42	6.88	....	6.38	....	14.50	....	2.22	1.35	....
1917-18												
1	2.38	5.12	3.60	5.40	17.50	6.05	4.18	5.95	3.18	3.60	3.78	3.40
2	3.12	4.55	3.82	5.38	16.65	5.45	4.02	5.22	3.00	3.38	3.40	2.65
3	2.60	4.15	3.75	5.30	16.00	5.10	8.60	4.75	2.75	3.48	2.75	2.68
4	2.20	3.62	3.48	5.15	13.55	4.78	9.65	4.42	2.52	2.98	2.32	2.50
5	2.00	3.25	3.20	5.10	10.15	4.80	7.82	4.10	2.30	2.75	2.00	2.92
6	1.78	3.02	2.90	9.32	8.85	4.95	6.10	3.85	3.10	2.52	1.85	2.62
7	1.70	2.82	2.72	12.50	10.05	7.15	5.05	3.62	3.30	2.28	1.65	2.32
8	1.65	2.60	2.68	11.05	18.45	6.80	4.52	3.48	3.00	2.15	1.48	2.25
9	1.58	2.45	3.48	8.95	31.80	6.75	4.92	3.70	2.80	1.95	1.35	1.92
10	1.50	2.35	3.50	7.18	34.00	6.48	6.20	4.48	2.95	1.85	1.28	1.80
11	1.38	2.25	3.58	6.40	25.45	5.85	7.10	3.80	2.95	1.78	1.28	1.72
12	1.45	2.18	3.48	7.95	17.78	5.40	6.85	4.70	2.60	1.70	1.25	2.15
13	1.40	2.10	3.35	7.10	13.90	12.10	5.78	12.15	2.32	1.62	1.08	2.68
14	1.40	2.00	3.12	8.05	9.95	20.15	5.02	12.80	2.15	1.60	1.10	2.10
15	1.38	1.95	3.10	8.15	9.18	16.10	4.62	11.72	1.98	1.58	1.10	1.75
16	1.32	1.92	3.02	12.02	9.15	11.75	4.25	9.90	1.85	1.52	1.05	1.65
17	1.30	1.90	3.00	15.60	7.95	8.25	4.05	7.80	1.75	1.42	.95	1.68
18	1.58	1.90	2.80	15.25	6.62	6.78	4.20	5.82	1.62	1.38	1.00	1.58
19	1.72	1.88	2.82	12.75	7.72	5.82	4.22	5.10	1.48	1.35	1.30	1.50
20	1.88	1.82	2.95	10.20	17.50	5.22	4.00	5.30	1.42	1.95	1.38	1.38
21	5.80	1.80	4.08	9.40	14.02	4.88	7.40	8.65	1.40	1.62	1.25	1.22
22	6.18	1.72	6.38	8.70	12.40	4.55	11.10	10.00	1.38	1.45	1.12	1.18
23	5.42	1.68	6.08	7.58	10.78	4.42	10.75	6.72	1.68	1.35	1.10	1.15
24	3.95	1.62	6.00	7.20	8.60	4.30	7.25	6.00	1.70	1.30	1.05	1.32
25	3.38	1.58	5.62	6.72	6.75	4.75	7.50	5.65	2.50	1.22	1.00	1.18

Daily Gage height, in feet, of Licking River at Catawba, Ky., for the years ending September 30, 1916-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
26	2.95	1.68	4.90	6.75	8.68	5.40	7.50	4.88	6.18	1.85	1.02	1.12
27	2.72	1.78	5.25	7.05	7.02	6.35	10.25	5.50	5.80	3.22	1.10	1.05
28	2.60	1.55	5.72	9.65	6.70	6.60	11.45	5.08	5.42	3.20	2.15	.90
29	2.58	1.70	5.15	16.10	....	5.75	9.55	4.55	5.65	2.60	1.65	.85
30	3.48	3.20	4.98	19.48	....	4.95	7.02	3.82	4.05	9.98	2.05	.92
31	4.65	....	5.75	18.70	....	4.50	....	3.50	....	5.25	3.20	....
1918-19												
1	0.80	2.95	3.65	18.70	4.25	7.15	4.50	3.90	4.32	4.20	1.10	1.02
2	.80	2.80	3.20	30.35	4.00	7.30	4.40	5.68	3.90	3.68	1.05	1.00
3	.85	3.20	2.95	30.10	3.88	7.20	4.25	7.75	3.58	3.20	1.00	1.00
4	.85	3.15	2.70	23.65	3.62	6.10	4.05	6.55	3.28	2.85	1.00	.98
5	.80	2.82	2.55	20.05	3.60	8.35	3.80	5.00	3.05	2.85	.95	.92
6	.80	2.45	2.48	17.55	3.45	10.15	3.68	4.50	2.85	2.42	1.15	.90
7	.75	2.18	2.38	11.15	3.38	11.00	3.58	4.48	2.72	2.05	1.18	.88
8	.72	2.05	2.32	6.15	3.20	9.72	3.52	5.28	2.70	1.88	1.22	.85
9	.70	1.90	2.38	5.20	3.08	15.65	3.75	11.60	2.75	1.75	1.40	1.10
10	.70	1.85	6.00	4.95	2.95	15.12	5.25	21.85	2.45	4.60	1.30	1.10
11	.70	1.72	8.90	4.75	2.88	12.15	12.45	20.60	2.38	4.52	1.22	1.10
12	.70	1.70	7.20	4.60	2.80	9.22	11.00	18.68	2.60	4.15	1.12	1.10
13	.68	1.65	10.05	4.28	3.25	7.90	8.60	15.20	3.62	3.48	1.08	1.10
14	.65	1.60	10.25	4.18	4.35	6.65	6.25	9.85	3.38	2.88	1.05	1.02
15	.62	1.48	11.95	4.20	4.55	6.35	5.58	6.88	3.62	2.68	1.00	1.00
16	.60	1.40	10.70	4.20	4.42	6.95	5.25	6.60	4.78	2.50	1.00	.98
17	.62	2.25	8.28	4.22	4.35	19.25	5.08	6.75	3.55	2.22	1.02	.92
18	.65	7.30	6.15	4.35	4.40	10.75	5.30	6.02	2.52	2.02	1.00	.88
19	.65	7.02	5.25	4.38	4.40	7.95	5.32	5.38	2.22	1.98	.98	.85
20	.72	5.55	4.50	4.28	4.40	6.68	4.75	7.45	2.08	2.15	.95	.80
21	.75	4.90	4.05	4.38	4.95	5.95	4.32	6.48	2.05	2.35	.95	.80
22	.75	4.50	4.55	4.72	5.88	5.40	4.05	6.10	2.68	1.98	.98	1.85
23	.75	5.08	5.58	6.00	5.98	4.98	3.92	8.15	2.90	1.65	1.00	1.35
24	.80	3.52	8.30	8.80	5.75	4.68	4.38	10.40	2.68	1.40	1.02	1.05
25	.80	3.15	8.15	9.55	5.52	4.38	4.38	7.92	3.30	1.38	1.18	.90
26	.85	2.85	7.15	8.85	6.10	4.20	4.28	9.45	8.15	1.30	1.08	1.00
27	1.20	2.65	6.55	7.60	6.90	5.50	3.95	10.10	9.85	1.25	1.42	1.65
28	2.92	3.50	5.70	6.25	6.82	4.55	3.70	7.78	7.80	1.10	1.45	1.85
29	4.15	4.70	4.80	5.35	....	4.40	3.55	6.15	5.85	1.15	1.28	1.65
30	2.85	4.28	4.25	4.80	....	4.62	3.52	5.38	4.80	1.15	1.25	1.50
31	2.82	....	4.25	4.55	....	4.70	....	4.82	....	1.12	1.10	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1919-20										
1	1.35	17.18	13.65	4.35	6.60	5.62	4.80	7.40	4.12	2.18
2	1.20	30.20	9.05	4.15	6.20	5.52	5.48	6.65	3.62	2.02
3	1.15	29.52	7.70	6.00	6.00	5.38	7.50	6.12	5.78	2.20
4	1.10	22.08	6.75	6.80	6.95	5.68	8.80	5.75	8.35	2.88
5	1.08	17.62	5.82	6.10	6.80	10.55	9.28	5.42	10.45	2.82
6	1.00	14.70	8.90	6.55	6.22	9.82	10.40	5.10	9.75	*
7	1.55	10.95	30.25	6.40	5.85	9.40	10.98	4.65	9.35	....
8	1.58	6.80	31.20	13.00	5.55	7.60	10.98	4.60	7.60	....
9	1.45	5.60	30.00	31.95	5.35	6.52	10.45	4.78	6.38	....
10	1.35	5.08	30.10	30.20	6.42	6.02	9.12	6.10	5.22	....
11	1.42	6.85	25.48	24.25	6.45	7.90	7.45	5.62	4.52	....
12	1.85	6.35	20.80	20.80	6.00	16.80	6.65	9.80	4.10	....
13	3.40	6.15	25.85	19.00	5.72	14.15	6.40	10.65	3.72	....
14	5.50	5.98	25.90	14.90	5.40	11.08	6.05	6.82	5.25	....

Daily Gage height, in feet, of Licking River at Catawba, Ky., for the years ending September 30, 1916-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1919-20										
15	12.75	5.40	21.95	9.25	5.10	9.00	5.80	5.90	4.58	....
16	10.05	5.00	17.70	6.25	4.82	14.62	5.48	5.28	3.65	....
17	8.15	4.60	15.10	7.30	4.55	21.30	5.35	4.80	3.25	....
18	8.08	4.35	13.05	6.80	4.55	17.20	5.10	4.55	2.95	....
19	8.20	4.15	9.75	6.38	4.65	24.35	6.60	7.60	2.68	....
20	7.02	4.00	7.12	6.30	4.55	24.15	28.20	8.55	2.58	....
21	5.55	3.52	6.48	9.65	5.82	19.82	36.70	6.10	2.52	....
22	4.72	3.32	5.85	14.60	9.20	16.60	33.00	5.20	2.50	....
23	4.62	3.42	5.50	21.70	10.90	14.10	23.30	4.80	3.05	....
24	4.60	3.38	5.38	28.70	10.90	10.75	16.10	4.52	3.80	....
25	4.48	6.68	5.32	25.00	10.30	7.55	9.90	5.58	4.08	....
26	4.80	24.28	4.90	18.90	8.82	6.65	7.25	5.60	3.62	....
27	10.75	32.55	4.75	16.50	7.25	6.10	9.30	5.20	3.28	....
28	9.50	28.75	4.60	16.05	6.48	5.68	12.28	4.65	2.92	....
29	8.02	21.75	4.48	12.45	5.90	5.40	10.30	4.25	2.58	....
30	7.72	19.40	4.92	8.52	....	5.15	8.80	3.92	2.28	....
31	7.78	....	4.40	7.35	....	4.88	....	4.05	....	....

*Record discontinued.

NOTE.—Stage-discharge relation probably affected by ice from about Dec. 20, 1919, to Jan. 9, 1920, Jan. 15 to 21 and Feb. 1 to Feb. 22, 1920.

Daily discharge, in second-feet, of Licking River at Catawba, Ky., for the years ending September 30, 1916-1917.

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1916				1916				1916			
1	....	132	210	11	....	1,360	342	21	2,370	980	125
2	....	132	1,830	12	....	1,270	324	22	1,830	939	125
3	....	125	1,730	13	....	900	139	23	1,830	939	125
4	....	125	2,840	14	125	900	139	24	1,730	900	118
5	....	118	1,360	15	125	1,020	132	25	939	900	118
6	....	562	900	16	125	3,440	125	26	647	900	118
7	....	380	2,370	17	125	5,510	125	27	360	589	112
8	....	360	900	18	125	6,940	125	28	342	360	112
9	....	589	1,830	19	200	5,510	132	29	342	342	118
10	....	2,480	589	20	939	2,370	132	30	139	324	125
								31	132	324	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
1	118	291	399	9,130	5,090	11,100	1,830	1,100	18,800	1,360	342	189
2	118	234	360	4,570	5,370	19,900	29,700	1,540	13,400	1,540	261	154
3	118	210	360	17,500	5,650	19,500	20,300	1,270	10,600	1,180	234	154
4	125	189	360	18,200	4,570	21,800	12,900	1,100	10,400	618	210	132
5	125	189	442	19,700	3,570	25,300	14,400	1,020	9,930	464	170	112
6	125	189	2,840	21,600	2,370	20,800	27,700	860	7,080	399	170	112
7	125	180	4,570	19,500	2,150	18,400	20,300	782	4,830	342	154	112
8	118	170	2,260	16,400	2,370	21,400	16,700	711	6,790	308	139	13,000
9	118	162	1,540	13,000	2,370	30,900	13,000	647	12,000	261	139	10,900
10	118	170	1,180	8,240	2,260	30,100	8,830	589	8,980	234	132	5,650
11	112	154	900	4,830	1,930	24,900	6,210	589	6,790	210	125	3,320

Daily discharge, in second-feet, of Licking River at Catawba, Ky., for the years ending September 30, 1916-1917.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
12	112	154	860	3,570	1,440	32,100	4,700	589	5,090	200	112	1,830
13	112	154	647	2,840	1,360	40,500	3,820	618	3,570	170	112	1,100
14	112	170	589	2,150	1,540	41,100	3,320	647	3,440	170	139	711
15	106	189	589	1,730	1,540	32,300	3,080	647	2,260	589	146	487
16	112	189	1,020	2,370	1,360	20,800	2,840	589	2,150	2,720	146	399
17	112	189	1,360	3,820	1,830	14,100	2,370	536	1,730	980	139	324
18	112	189	536	2,600	5,650	10,200	1,930	487	1,360	442	125	276
19	112	189	512	2,370	8,630	11,100	1,730	442	1,100	291	112	222
20	324	180	589	2,720	8,240	9,290	1,540	399	1,020	248	106	200
21	1,730	170	512	11,700	7,220	18,000	1,360	360	3,440	782	106	189
22	2,840	162	1,360	53,400	6,790	21,000	1,270	324	4,570	2,150	118	210
23	2,260	189	5,930	54,700	11,100	16,500	1,100	324	1,930	1,730	125	360
24	1,360	512	6,790	43,400	13,900	23,500	1,020	291	1,180	1,440	125	234
25	900	360	7,370	30,500	11,400	21,600	939	291	900	1,440	100	189
26	589	291	6,790	25,300	9,610	18,800	860	360	647	1,020	100	170
27	360	342	36,700	15,100	10,200	17,800	821	40,700	536	647	100	154
28	360	512	26,900	6,210	9,130	13,000	711	46,800	487	1,180	89	154
29	399	487	21,000	7,660	....	8,240	782	31,700	1,540	821	100	189
30	420	464	15,800	6,360	....	5,930	821	20,100	2,600	536	154	170
31	324	....	12,000	5,230	....	4,570	....	17,500	....	399	162	....

Monthly discharge of Licking River at Catawba, Ky., for the years ending September 30, 1916-1917.

(Drainage area, 3,300 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1916					
July 14-31	2,370	125	690	0.209	0.14
August	6,940	118	1,350	.409	.47
September	2,840	112	582	.176	.20
1916-1917					
October	2,840	106	454	.138	.16
November	512	154	241	.073	.08
December	36,700	360	5,260	1.59	1.83
January	54,700	1,730	14,100	4.27	4.92
February	13,900	1,360	5,310	1.61	1.68
March	41,100	4,570	20,100	6.09	7.02
April	29,700	711	6,900	2.09	2.33
May	46,800	291	5,610	1.70	1.96
June	18,800	487	4,970	1.51	1.68
July	2,720	170	802	.243	.28
August	342	89	145	.044	.05
September	13,000	112	1,380	.418	.47
The year	54,700	89	5,460	1.65	22.46

LICKING RIVER AT MORNING VIEW, KY.

LOCATION.—About 700 feet upstream from Rouses' Ford at Morning View, Kenton County, Cruisers Creek enters from the left about 1 mile below gage.

DRAINAGE AREA.—3,520 square miles (United States Engineer Corps).

RECORDS AVAILABLE.—September 17, 1915 to September 30, 1916, when station was discontinued, because stage-discharge relation is at times affected by backwater from Ohio River.

GAGE.—Slope gage in two sections on west bank of river; lower section, extending to 15 feet, is about 700 feet above Rouses' Ford; upper section is attached to cross ties of inclined track of Louisville & Nashville Railroad pumping station and is about 500 feet downstream from lower section. Gage read by T. B. Asbill. Sea-level elevation of zero of gage 465.95 feet.

DISCHARGE MEASUREMENTS.—Made from cable just above Rouses' Ford.

CHANNEL AND CONTROL.—Bed of river composed of ledge rocks. Above a stage of 6 feet the banks are covered with a thick growth of willows. Principal control is a permanent bar just below the mouth of Cruisers Creek, about a mile below the gage. Another bar about three-fourths mile below the gage forms a secondary control.

EXTREMES OF DISCHARGE.—September 18, 1915 to September 30, 1916; Maximum stage recorded 37.5 feet December 18, 1915 (discharge, 55,500, second-feet); minimum stage, 1.3 feet September 28, 1916 (discharge, 70 second-feet).

ACCURACY.—Stage-discharge relation permanent except for occasional backwater from Ohio River, and the varying effect of rising and falling stage. Rating curve fairly well defined between 200 and 40,000 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage heights to rating table except for periods when backwater was caused by Ohio River, when discharge was determined from the flow below mouth of South Fork at Falmouth. Results good.

COOPERATION.—Base data furnished by United States Engineer Corps.

Discharge measurements of Licking River at Morning View, Ky., during the years ending Sept. 30, 1915-1916.

Date	Made by—	Gage Height	Dis-charge	Date	Made by—	Gage Height	Dis-charge
		Ft.	Sec.-ft.			Ft.	Sec.-ft.
1914-15				1915-16			
Sept. 7	Daubenspeck and J. L. T.	5.3	2,410	Dec. 30	L. M. Crosley	26.85	35,100
8	Daubenspeck and J. L. T.	7.4	4,960	June 19	A. C. Shepard	13.65	16,000
8	Daubenspeck and J. T. L.	6.10	3,300	20	A. C. Shepard	17.81	22,200
21	H. R. Daubenspeck	3.2	812	20	A. C. Shepard	18.78	23,700
1915-16				20	Crosley & Shepard	19.58	24,600
Oct. 5	Crosley and Daubenspeck	7.03	4,820	20	Crosley & Shepard	20.23	25,300
6	Crosley and Daubenspeck	5.55	2,920	20	Crosley & Shepard	20.79	25,800
Nov. 9	L. M. Crosley	1.85	224	21	A. C. Shepard	22.94	27,400
19	L. M. Crosley	15.45	17,500	21	A. C. Shepard	22.57	25,400
23	H. R. Daubenspeck	7.43	4,890	21	A. C. Shepard	21.70	24,600
				22	A. C. Shepard	17.93	19,800
				22	A. C. Shepard	17.36	19,400
				22	A. C. Shepard	16.88	18,700
				22	A. C. Shepard	16.2	18,100
				23	A. C. Shepard	13.2	14,000
				23	A. C. Shepard	12.4	12,500
				23	A. C. Shepard	11.60	11,300
				23	A. C. Shepard	10.32	9,950

Daily gage height, in feet, of Licking River at Morning View, Ky., for the years ending September 30, 1915-1916.

Day	Sept.	Day	Sept.	Day	Sept.
1915		1915		1915	
1		11		21	3.20
2		12		22	2.90
3		13		23	2.65
4		14		24	2.45
5		15		25	2.30
6		16		26	2.10
7		17		27	2.00
8		18	2.25	28	2.05
9		19	2.40	29	2.00
10		20	2.95	30	2.00

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	3.25	2.2	5.7	20.1	24.4	6.36	22.8	4.95	3.65	3.15	2.50	2.25
2	11.2	2.1	5.2	21.1	22.0	6.1	20.6	4.5	4.35	2.85	1.95	4.5
3	13.9	2.2	4.6	18.8	18.2	6.3	16.2	4.3	5.05	2.65	1.80	4.9
4	9.6	2.0	4.55	15.9	14.6	7.3	12.4	5.95	3.85	2.45	1.70	5.2
5	7.6	1.9	4.35	12.8	11.2	7.55	9.25	7.2	3.3	2.35	1.60	4.65
6	5.4	1.85	4.15	12.7	9.5	8.05	6.7	9.15	4.25	2.3	2.3	3.75
7	4.5	1.9	3.95	11.9	9.4	14.0	5.5	7.75	5.75	2.05	3.05	4.95
8	4.35	1.85	3.75	10.9	8.8	11.8	5.65	6.0	6.68	2.00	2.75	3.55
9	4.55	1.8	3.55	9.2	8.4	10.7	7.4	5.1	7.15	1.90	3.00	4.85
10	4.05	1.8	3.45	9.3	7.7	9.5	8.3	4.7	5.75	1.85	4.8	3.6
11	3.6	1.75	3.35	18.4	7.5	7.15	9.05	4.3	5.25	1.80	4.9	2.85
12	3.25	2.05	3.3	34.0	10.2	6.95	8.85	4.0	5.75	1.80	3.9	2.45

Daily gage height in feet, of Licking River at Morning View, Ky., for the years ending September 30, 1915-1916.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
13	2.95	1.85	3.85	35.6	21.7	6.15	8.52	3.7	5.5	1.75	3.9	2.25
14	2.8	2.35	4.7	33.3	21.5	6.3	7.45	3.45	4.75	1.70	3.4	2.1
15	2.9	6.9	5.4	27.9	16.2	14.3	6.4	3.35	4.1	1.70	4.0	2.0
16	2.85	9.4	6.55	23.8	12.0	10.7	5.8	3.15	4.4	1.70	4.35	1.9
17	2.45	11.3	32.8	20.2	10.7	9.1	5.6	3.1	5.15	1.70	7.4	1.8
18	2.4	10.1	37.3	14.0	11.0	8.2	5.35	2.95	6.15	1.70	8.3	1.7
19	2.4	15.3	36.1	8.25	9.85	8.0	5.1	2.8	11.0	1.65	7.85	1.7
20	2.5	12.7	30.0	6.7	8.3	7.55	4.75	2.65	18.9	3.10	5.6	1.8
21	2.45	12.1	25.3	7.2	7.3	7.3	4.55	2.6	22.0	3.95	4.15	1.8
22	2.5	9.4	23.5	9.05	6.6	7.05	4.35	2.63	17.2	4.85	3.7	1.7
23	4.05	7.2	21.0	12.0	6.15	6.80	4.15	2.8	11.6	4.55	3.7	1.6
24	3.5	5.8	14.5	11.9	8.95	6.35	3.95	2.7	6.4	4.25	3.7	1.5
25	3.1	5.2	12.8	9.75	9.25	5.88	3.85	2.6	4.95	4.05	3.4	1.5
26	2.95	4.6	9.9	8.35	9.15	7.05	3.95	2.6	4.35	3.50	3.45	1.4
27	2.75	4.25	10.2	7.35	8.2	12.6	4.15	2.73	3.95	3.00	3.0	1.4
28	2.55	4.25	11.7	6.65	7.5	14.4	4.3	2.7	3.65	2.60	3.15	1.3
29	2.4	5.1	19.2	9.35	6.9	21.1	5.25	2.8	3.40	2.40	2.65	.14
30	2.4	6.0	26.8	28.1	....	24.3	5.5	4.23	3.20	2.25	2.45	1.7
31	2.3	....	24.0	27.1	....	23.8	....	3.2	....	....	2.25	....

Daily discharge, in second-feet, of Licking River at Morning View, Ky., for the years ending September 30, 1915-1916.

Day	Sept.	Day	Sept.	Day	Sept.
1915		1915		1915	
1		11		21	810
2		12		22	660
3		13		23	542
4		14		24	460
5		15		25	400
6		16		26	320
7		17		27	280
8		18	380	28	300
9		19	440	29	280
10		20	685	30	280

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	810	360	2,900	21,000	29,000	3,700	20,800	2,170	1,050	810	480	380
2	10,900	320	2,370	21,000	26,000	3,340	15,700	1,720	1,640	635	262	1,720
3	15,400	360	1,810	16,100	19,300	3,580	7,500	1,560	2,170	542	210	2,080
4	8,290	280	1,810	11,300	12,500	4,840	4,600	3,230	1,190	460	180	2,370
5	5,230	245	1,640	7,300	7,700	5,230	3,500	4,710	870	420	150	1,810
6	2,570	228	1,480	9,400	6,600	5,770	3,000	7,630	1,480	400	400	1,190
7	1,720	245	1,330	7,700	7,500	15,600	2,680	5,490	3,010	300	710	2,170
8	1,640	288	1,190	7,300	6,980	11,900	2,790	3,230	4,060	280	588	1,050
9	1,810	210	1,050	6,000	6,350	10,100	4,970	2,270	4,710	245	710	1,990
10	1,330	210	930	7,100	5,360	8,120	6,200	1,900	3,010	228	1,990	1,050
11	1,050	195	930	23,900	5,100	4,710	7,300	1,560	2,370	210	2,080	635
12	810	300	870	46,000	9,280	4,450	6,980	1,330	3,010	210	1,260	460
13	685	228	1,190	51,000	25,600	3,460	6,500	1,120	2,680	195	1,260	380
14	610	420	1,900	42,800	25,400	3,580	4,970	930	1,990	180	930	320
15	660	4,320	2,570	28,900	17,000	16,000	3,700	930	1,400	180	1,330	280

Daily discharge, in second-feet, of Licking River at Morning View, Ky., for the years ending September 30, 1915-1916—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
16	635	7,960	3,940	23,000	10,800	10,100	3,010	810	1,640	180	1,640	245
17	460	11,100	46,100	16,000	10,100	7,460	2,790	760	2,370	180	4,970	210
18	440	9,120	55,100	7,100	10,600	6,050	2,570	685	3,460	180	6,200	180
19	440	17,600	52,700	3,700	8,620	5,770	2,270	610	10,600	165	5,490	180
20	480	13,400	37,600	3,500	6,200	5,230	1,990	542	22,300	760	2,790	210
21	460	12,400	30,000	4,710	4,840	4,840	1,810	520	26,000	1,330	1,480	210
22	480	7,960	27,100	7,300	3,940	4,450	1,640	542	20,100	1,990	1,120	180
23	1,330	4,710	21,700	12,200	3,460	4,190	1,480	610	11,600	1,810	1,120	150
24	990	3,010	12,700	12,100	7,300	3,700	1,330	565	3,700	1,480	1,120	120
25	760	2,370	10,400	8,620	7,630	3,120	1,190	520	2,170	1,330	930	120
26	685	1,810	8,780	6,350	7,630	3,710	1,330	520	1,640	990	930	95
27	588	1,480	9,280	4,970	6,050	13,000	1,480	588	1,330	710	710	95
28	500	1,480	11,800	3,940	5,100	16,300	1,560	565	1,050	520	810	70
29	440	2,270	22,600	7,960	4,320	27,800	2,370	610	930	440	542	95
30	440	3,230	34,100	36,700	....	28,200	2,680	1,480	810	380	460	180
31	400	....	27,300	34,700	....	24,500	....	810	....	430	380	....

NOTE.—Discharge estimated from flow at Falmouth on account of backwater from Ohio River, as follows: Dec. 20-25, Jan. 1-20, Feb. 1-7 and 15-16, Mar. 26-31, Apr. 1-6.

Monthly discharge of Licking River at Morning View, Ky., for the years ending September 30, 1915-1916.

(Drainage area, 3,520 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1915					
September 18-30	810	280	449	0.128	0.06
1915-16					
October	15,400	400	2,030	.577	.67
November	17,600	195	3,600	1.02	1.14
December	55,100	870	14,000	3.98	4.59
January	51,000	3,500	16,100	4.57	5.27
February	29,000	3,460	10,600	3.01	3.25
March	28,200	3,120	8,800	2.50	2.88
April	20,800	1,190	4,360	1.24	1.38
May	7,630	520	1,630	.463	.53
June	26,000	810	4,810	1.37	1.53
July	1,990	165	572	.162	.19
August	6,200	150	6,390	.395	.46
September	2,370	70	674	.191	.21
The year	55,100	70	5,720	1.62	22.10

SOUTH FORK LICKING RIVER AT HAYES, KY.

LOCATION.—At two-span steel highway bridge at Hayes, Pendleton County, about 2½ miles south of Falmouth.

DRAINAGE AREA.—922 square miles (measured by United States Engineer Corps).

RECORDS AVAILABLE.—July 7, 1916, to July 6, 1920, when station was discontinued.

GAGE.—Chain gage attached to downstream handrail of bridge; read by J. K. Frazer. Sea-level elevation of zero of gage 540.10 feet.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge.

CHANNEL AND CONTROL.—Bed of river composed of ledge rock; banks lined with vegetation. Control about 800 feet below gage; probably permanent. Backwater begins to affect the stage-discharge relation at this station when the main Licking River reaches a stage of about 28 feet on the gage at Falmouth.

EXTREMES OF STAGE.—Maximum stage recorded during period of record 17.05 feet at 6 a. m. April 21, 1920; minimum stage recorded, 0.20 foot at 6 a. m. September 6, 1917.

ICE.—Stage-discharge relation not affected by ice except during severe winters.

ACCURACY.—Stage-discharge relation probably permanent, except as affected by ice and by backwater from the Licking. Rating curve not yet determined. Gage read twice daily to hundredths.

COOPERATION.—Base data furnished by United States Engineer Corps.

Discharge measurements of South Fork of Licking River at Hayes, Ky., during the years ending September 30, 1916-1917.

(Made by L. M. Crosley.)

Date	Gage height	Dis-charge	Date	Gage height	Dis-charge	Date	Gage height	Dis-charge
1916	Feet	Sec.-ft.	1917	Feet	Sec.-ft.	1917	Feet	Sec. ft.
July 7	1.00	590	Jan. 9	3.66	1,730	Jan. 23	14.20	22,900
1917			10	3.17	1,240	24	9.55	13,000
Oct. 3	.63	17.4	22	14.0	23,400	25	4.67	3,300

Daily gage height, in feet, of South Fork of Licking River at Hayes, Ky., for the years ending September 30, 1916-1920.

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1916				1916				1916			
1	....	1.96	0.91	11	0.93	1.40	1.01	21	3.84	1.27	0.55
2	....	.90	3.14	12	.86	1.20	.85	22	3.04	1.16	.60
3	....	.81	1.74	13	.84	1.04	.82	23	2.46	1.05	.52
4	....	.80	1.11	14	.87	.91	.84	24	2.03	.90	.49
5	....	.80	.88	15	1.02	1.13	.84	25	1.72	.83	.49
6	....	.67	.77	16	.85	1.53	.73	26	1.55	.81	.51
7	0.92	.75	.69	17	.80	1.18	.70	27	1.39	.83	.50
8	.97	.82	1.30	18	.83	1.06	.62	28	1.26	.95	.55
9	.92	1.21	1.20	19	1.64	1.35	.56	29	1.27	.99	.64
10	.94	1.73	1.17	20	2.11	1.31	.50	30	1.11	.94	.64
								31	1.01	.89	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
1	0.65	0.79	0.72	3.05	2.89	3.46	2.89	1.70	4.81	1.07	0.85	0.67
2	.59	.68	.69	2.73	3.20	5.68	11.17	1.57	4.41	2.35	.74	.55
3	.62	.61	.66	7.95	3.28	4.96	7.99	1.48	4.06	1.81	.69	.46
4	.56	.53	.69	6.48	2.42	6.36	5.29	1.35	3.78	1.28	.66	.39
5	.52	.52	1.15	7.18	3.26	6.66	5.77	1.41	3.13	1.08	.60	.33
6	.60	.51	1.08	6.92	3.70	5.13	8.42	1.35	2.61	1.00	.57	.24
7	.53	.53	2.34	5.72	3.83	4.63	6.49	1.35	2.33	.94	.54	.25
8	.57	.56	1.99	4.32	3.33	6.39	4.79	1.31	3.96	.88	.53	2.72
9	.60	.59	1.72	3.51	2.94	9.09	4.27	1.22	6.24	.83	.52	4.72
10	.60	.57	1.48	3.11	2.67	8.02	3.77	1.17	4.48	.79	.53	3.34
11	.64	.56	1.37	2.81	2.57	6.39	3.31	1.17	3.94	.75	.52	2.08
12	.53	.57	1.28	2.53	2.43	10.82	3.02	1.17	3.12	.70	.52	1.51
13	.45	.57	1.13	2.29	2.17	11.19	2.74	1.25	2.62	.66	.51	1.26
14	.43	.58	1.07	2.12	2.20	8.47	2.60	1.32	3.17	.66	.45	1.07
15	.40	.57	1.14	1.84	2.05	6.87	2.38	1.20	2.36	.76	.52	.99
16	.38	.55	1.06	1.88	1.89	5.02	2.30	1.17	2.51	1.61	.65	.93
17	.35	.55	1.15	2.33	1.93	4.25	2.15	1.05	2.17	1.10	.53	.89
18	.31	.52	1.10	2.35	2.72	3.82	2.04	1.07	1.93	.88	.43	.74
19	.71	.54	1.06	2.31	4.06	3.77	1.93	1.03	1.67	.78	.42	.61
20	.87	.52	1.07	2.16	3.66	3.22	1.81	.97	1.60	.72	.37	.50
21	1.31	.53	1.18	5.85	3.46	6.87	1.72	.89	1.51	.67	.31	.86
22	1.26	.56	1.82	14.68	3.12	7.39	1.65	.92	1.51	.75	.41	.48
23	1.06	.71	1.60	14.08	4.83	5.22	1.56	.88	1.98	1.45	.53	.58
24	1.08	1.45	2.49	8.73	4.16	6.97	1.50	.86	1.63	1.28	.49	.70
25	1.19	1.23	3.72	4.43	3.96	6.65	1.44	.91	1.46	1.72	.41	.65
26	1.10	.94	3.52	3.68	3.46	4.62	1.46	1.00	1.19	1.74	.33	.54
27	1.00	.85	11.82	3.24	3.42	4.77	1.37	13.36	1.11	1.31	.28	.47
28	.95	.76	8.40	3.26	3.00	3.67	1.27	13.66	1.04	1.29	.30	.42
29	.88	.77	7.08	4.76	....	3.41	1.42	7.58	1.08	1.17	.36	.39
30	.91	.73	4.92	3.41	....	2.96	1.54	4.76	1.09	1.05	.39	.44
31	.89	....	3.65	3.11	....	2.67	....	3.46	....	.96	1.00	....
1917-18												
1	.41	.76	.93	2.63	6.08	2.49	1.54	2.12	1.47	1.13	2.55	2.35
2	.35	1.09	1.15	2.24	5.35	2.34	1.47	1.90	1.36	1.02	1.92	1.66
3	.29	1.26	1.34	2.16	5.10	2.18	3.33	1.74	1.22	1.01	1.58	1.45
4	.26	1.08	1.19	2.10	4.60	2.10	3.27	1.60	1.15	1.02	1.37	1.71
5	.24	.98	1.05	2.03	4.12	2.09	2.47	1.48	1.08	.97	1.19	2.06
6	.26	1.00	.99	4.92	4.22	2.18	2.03	1.39	2.12	.93	1.04	1.57
7	.47	.96	.93	5.18	5.85	2.87	1.80	1.33	1.80	.83	.88	1.43
8	.47	.84	1.15	5.68	11.72	2.57	1.67	1.24	1.82	.86	.82	1.29
9	.39	.74	.97	4.05	14.10	2.38	1.54	1.31	1.39	.80	.72	1.09
10	.32	.70	1.16	3.04	10.72	2.11	1.51	1.24	1.21	.80	.74	1.01

Daily gage height, in feet, of South Fork of Licking River at Hayes, Ky., for the years ending September 30, 1916-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
11	.26	.75	1.11	2.58	7.00	2.00	1.51	1.32	1.06	.75	.71	.91
12	.33	.71	1.02	3.05	6.95	1.96	1.46	1.94	.95	.70	.67	1.06
13	.35	.62	1.13	3.85	5.15	5.88	1.39	5.15	.95	.64	.57	1.72
14	.36	.64	1.02	3.55	4.28	7.22	1.32	5.75	.89	.67	.77	1.07
15	.33	.60	.86	3.62	4.05	4.80	1.25	4.25	.82	.66	.67	.81
16	.30	.55	.83	3.62	4.22	3.68	1.23	3.11	.77	.54	.55	.86
17	.28	.53	.85	7.38	3.65	3.03	1.22	2.60	.73	.55	.44	.98
18	.27	.59	.82	6.08	3.11	2.73	1.14	2.31	.54	.57	.38	.81
19	.28	.53	.85	4.92	3.77	2.46	1.19	2.03	.49	1.03	1.10	.72
20	.33	.47	1.07	4.12	7.25	2.25	1.19	3.01	.46	1.13	.96	.64
21	.31	.49	1.72	3.80	6.02	2.12	2.38	5.88	.41	.78	.82	.66
22	.27	.47	2.67	3.58	4.38	1.98	2.86	5.98	.39	.67	.77	.66
23	.29	.50	2.61	3.29	3.58	1.89	3.14	3.95	.41	.63	.73	.75
24	.31	.41	3.11	3.30	3.14	1.81	2.40	3.08	.34	.58	.70	.76
25	.29	.42	3.00	3.13	2.85	1.93	3.24	2.62	.86	.56	.66	.60
26	.27	.49	3.00	2.99	3.72	2.22	3.16	2.28	1.58	.76	.58	.59
27	.26	.42	3.02	3.03	2.97	2.19	2.94	2.03	1.37	.72	.53	.49
28	.43	.45	2.48	3.78	2.71	1.93	3.08	1.96	2.15	.67	1.41	.39
29	.41	.52	1.97	7.88	....	1.85	2.73	1.92	1.94	.59	1.71	.38
30	.70	.59	1.99	9.18	....	1.71	2.40	1.70	1.33	6.62	1.33	.39
31	.81	....	2.14	7.28	....	1.62	....	1.69	....	3.82	2.21	....
1918-19												
1	0.37	1.94	2.08	9.23	2.04	3.48	1.81	1.50	1.92	2.06	0.52	0.13
2	.33	1.65	1.91	13.70	1.91	2.83	1.72	2.38	1.77	1.76	.44	.12
3	.34	1.52	1.71	11.85	1.83	3.01	1.67	2.45	1.63	1.52	.40	.11
4	.32	1.41	1.58	5.95	1.75	2.64	1.61	2.06	1.51	1.36	.38	.10
5	.31	1.26	1.49	3.95	1.70	4.45	1.56	1.77	1.41	1.65	.38	.12
6	.29	1.14	1.39	3.28	1.66	4.30	1.50	1.58	1.31	1.12	.37	.10
7	.26	1.07	1.33	3.03	1.59	4.52	1.45	1.48	1.27	1.01	.49	.10
8	.23	1.01	1.28	2.80	1.51	3.72	1.43	1.48	1.27	.93	.44	.10
9	.27	.97	1.26	2.49	1.43	6.60	1.42	4.92	1.36	.92	.34	.08
10	.26	.92	3.82	2.43	1.39	6.78	2.76	9.85	1.21	2.25	.32	.08
11	.26	.88	5.40	2.17	1.35	4.82	5.65	7.20	1.27	3.92	.34	.15
12	.23	.86	3.34	2.02	1.33	3.92	5.75	5.12	1.38	2.50	.28	.11
13	.21	.84	5.90	1.93	1.51	3.41	3.98	4.00	1.22	1.91	.27	.10
14	.20	.79	5.55	1.89	2.06	3.13	3.11	3.40	2.38	1.51	.31	.08
15	.17	.79	5.88	1.90	1.88	3.05	2.68	3.05	1.78	1.28	.31	.07
16	.31	.76	5.38	1.91	1.87	3.61	2.81	2.81	3.77	1.13	.33	.07
17	.31	1.28	3.90	1.96	1.77	9.94	2.58	2.98	2.34	1.09	.33	.05
18	.27	4.25	3.20	1.99	1.77	5.78	2.29	2.93	1.62	.97	.29	.04
19	.28	4.45	2.77	2.02	1.68	4.48	2.10	2.69	1.29	.92	.27	.04
20	.38	3.34	2.49	2.03	1.63	3.78	1.92	3.44	1.16	.87	.27	.03
21	.33	2.82	2.28	2.03	1.88	3.36	1.78	3.55	1.29	.82	.29	.04
22	.31	2.46	2.71	1.94	2.35	2.98	1.70	3.24	1.13	.76	.26	.67
23	.31	2.16	2.59	3.36	2.64	2.70	1.67	3.68	1.42	.70	.34	.48
24	.29	1.94	3.98	3.60	2.55	2.50	2.32	5.25	1.58	.68	.33	.36
25	.23	1.73	4.02	4.42	2.43	2.34	2.24	3.80	2.03	.65	.28	.26
26	.68	1.59	3.75	3.65	2.64	2.22	1.88	3.32	3.65	.68	.21	.19
27	.81	1.47	3.20	3.12	3.50	3.60	1.63	3.43	4.98	.69	.17	.15
28	2.00	2.50	2.76	2.77	3.18	2.65	1.50	2.92	4.32	.63	.14	.12
29	2.22	2.20	2.49	2.52	....	2.28	1.42	2.57	3.16	.54	.12	.10
30	1.92	2.43	2.28	2.32	....	2.12	1.41	2.33	2.49	.61	.15	.08
31	1.91	....	2.16	2.17	....	1.96	....	2.12	....	.58	.13	....

Daily gage height, in feet, of South Fork of Licking River at Hayes, Ky., for the years ending September 30, 1916-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1919-20										
1	.06	9.25	4.58	1.64	2.76	2.35	1.91	2.93	1.41	.89
2	.09	14.82	3.72	1.57	2.60	2.22	1.99	2.66	1.42	.77
3	.11	12.90	3.33	1.42	2.61	2.14	2.69	2.47	2.00	.71
4	.11	6.55	2.97	1.57	3.50	2.14	3.30	2.34	3.12	.61
5	.09	4.30	2.66	1.77	3.50	4.50	3.34	2.16	5.70	.57
6	.11	3.52	5.07	1.65	3.05	4.40	3.33	2.05	3.98	.81
7	.12	3.15	14.62	1.63	2.80	3.60	3.10	1.93	3.15	....
8	.15	2.80	13.64	7.60	2.65	2.95	3.60	1.80	2.64	....
9	.23	2.49	10.51	14.95	2.48	2.64	3.38	1.75	2.37	....
10	.25	2.36	10.55	12.40	3.10	2.52	2.92	1.73	2.17	....
11	.31	3.33	6.80	5.65	2.81	3.75	2.61	1.80	1.87	....
12	.46	2.88	4.75	4.25	2.67	8.22	2.39	3.56	1.64	....
13	.91	2.68	10.18	3.60	2.53	5.90	2.40	3.55	1.50	....
14	2.34	2.50	10.57	3.18	2.37	4.70	2.52	2.72	2.92	....
15	6.40	2.31	7.78	2.89	2.24	3.82	2.35	2.26	1.76	....
16	4.60	2.15	4.90	2.85	3.03	7.48	2.13	1.92	1.34	....
17	4.20	1.99	4.02	3.20	3.04	9.25	2.14	1.73	1.21	....
18	3.55	1.86	3.58	3.23	2.10	6.65	2.03	1.62	1.11	....
19	3.09	1.68	3.17	2.84	2.03	10.74	2.18	2.90	1.03	....
20	2.41	1.61	2.86	2.64	2.03	10.14	15.38	4.28	1.05	....
21	2.07	1.53	2.59	4.60	2.90	6.25	16.58	3.03	1.07	....
22	2.01	1.47	2.35	7.32	3.85	4.40	12.92	2.52	1.11	....
23	1.68	1.43	2.24	10.02	4.78	3.68	6.42	2.21	1.16	....
24	1.55	1.42	2.12	11.84	4.08	3.25	4.22	2.01	1.11	....
25	1.96	2.68	2.09	8.18	3.52	2.94	3.46	2.13	1.15	....
26	2.30	12.48	1.99	5.08	3.13	2.72	3.06	2.09	1.20	....
27	6.10	14.62	1.85	4.35	2.78	2.52	4.26	1.97	1.14	....
28	4.75	10.90	1.87	4.22	2.53	2.33	5.48	1.72	1.06	....
29	3.72	5.78	1.74	3.55	2.41	2.17	3.90	1.56	.95	....
30	3.34	5.70	1.63	3.18	....	2.07	3.21	1.48	.89	....
31	4.00	....	1.73	3.03	....	1.95	....	1.53	....	....

NOTE.—Stage-discharge relation probably affected by ice about Dec. 18, 1919, to Jan. 9, 1920, Jan. 16 to 22, Feb. 1 to Feb. 24, 1920.

SOUTH FORK OF LICKING RIVER AT FALMOUTH, KY.

LOCATION.—At the single-span highway bridge about half a mile west of the Louisville & Nashville Railroad station at Falmouth, Pendleton County, and three-fourths mile above the mouth of the river.

DRAINAGE AREA.—944 square miles.

RECORDS AVAILABLE.—July 27, 1915, to July 31, 1916, when station was discontinued, because of backwater from Licking River.

GAGE.—Staff gage in two sections; lower section attached to downstream side of west abutment of bridge; upper section attached to telegraph pole 4 feet from upstream side of west abutment; read by L. A. Woolery.

DISCHARGE MEASUREMENTS.—Made from downstream side of bridge.

CHANNEL AND CONTROL.—Bed of river is rock; banks practically clear of vegetation. Control probably permanent, but stage-discharge relation is occasionally affected by backwater from Licking River.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period of records, 22.4 feet December 18, 1915 (discharge not estimated because of backwater from Licking River); minimum stage recorded, 1.3 feet November 11, 1915 (discharge, 20 second feet).

ACCURACY.—Stage-discharge relation affected by backwater from Licking River during high stages on that stream. Rating curve fairly well defined between 90 and 10,000 second-feet. Gage read to hundredths twice daily. Daily discharge except for periods when backwater was present, ascertained by applying mean daily gage heights to rating table. Results good except for periods when there was backwater at gage. See footnote to daily discharge.

COOPERATION.—Base data furnished by United States Engineer Corps.

Discharge Measurements of South Fork of Licking River at Falmouth, Ky., during the years ending September 30, 1915 and 1916

Date	Made by—	Gage Height	Discharge	Date	Made by—	Gage Height	Discharge
			Sec.-ft.				Sec.-ft.
1915		Ft.		1916		Ft.	
July 27	Crosley & Daubenspeck	1.6	96.5	Feb. 1	A. C. Shepard..........	8.71	9,070
				2	A. C. Shepard..........	7.63	7,600
Sept. 9	H. R. Daubenspeck	3.0	740	4	A. C. Shepard..........	4.45	2,020
Oct. 5	Crosley & Daubenspeck	3.55	1,150				

Daily gage height, in feet, of South Fork of Licking River at Falmouth, Ky., for the years ending September 30, 1915 and 1916.

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1915				1915				1915			
1	....	1.47	3.40	11	....	1.69	2.55	21	....	3.88	2.92
2	....	1.42	2.82	12	....	1.72	2.32	22	....	3.70	2.60
3	....	1.37	2.55	13	....	1.97	2.10	23	....	3.95	2.30
4	....	3.37	2.27	14	....	1.96	2.02	24	....	4.00	2.08
5	....	3.32	4.85	15	....	2.65	1.82	25	....	3.45	1.97
6	....	2.83	4.72	16	....	2.67	1.90	26	....	2.85	1.85
7	....	2.35	3.72	17	....	3.45	1.71	27	1.60	2.85	1.75
8	....	2.75	4.00	18	....	5.46	1.61	28	....	2.63	1.43
9	....	1.94	3.12	19	....	4.37	2.31	29	1.50	2.37	1.64
10	....	1.77	2.85	20	....	3.45	3.10	30	1.42	2.30	1.60
								31	1.37	3.60	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1915-16										
1	2.05	1.50	2.30	5.2	8.73	3.26	4.2	2.24	1.9	2.10
2	8.25	1.45	2.10	5.6	8.08	3.23	3.78	2.19	1.75	1.89
3	5.70	1.42	2.03	5.5	5.33	3.36	3.56	2.1	2.15	1.70
4	4.00	1.40	2.0	4.7	4.43	3.50	3.35	2.93	1.71	1.64
5	3.42	1.40	2.0	4.2	3.96	3.4	3.13	3.0	1.7	1.53
6	3.05	1.40	2.0	4.0	3.88	3.94	2.96	2.88	2.05	1.50
7	2.75	1.30	1.96	4.3	4.01	6.25	2.80	2.54	3.56	1.50
8	2.56	1.35	1.91	3.9	3.98	5.58	2.98	2.34	3.09	1.48
9	2.40	1.37	1.9	3.75	3.74	4.75	3.65	2.17	3.53	1.43
10	2.29	1.35	1.83	4.15	3.55	3.98	3.85	2.05	3.11	1.40
11	2.05	1.30	1.8	9.6	3.49	3.65	3.68	2.0	2.88	1.33
12	1.95	1.31	1.9	15.4	3.54	3.4	3.40	1.95	3.1	1.39
13	1.82	1.32	2.37	17.6	9.10	3.15	3.17	1.91	3.0	1.40
14	1.95	1.42	2.65	13.2	7.78	3.29	2.96	1.8	2.68	1.43
15	1.87	4.25	2.09	7.2	5.63	6.24	2.88	1.79	2.45	1.43
16	1.90	5.30	4.0	5.0	4.79	4.93	2.72	1.77	2.23	1.33
17	1.71	4.40	19.3	4.14	4.80	4.4	2.78	1.75	2.6	1.40
18	1.61	3.40	22.2	3.6	5.05	4.14	2.78	1.63	2.4	1.50
19	2.32	6.80	18.4	3.18	4.59	4.0	2.7	1.5	5.95	1.50
20	3.10	6.85	11.0	3.45	4.1	3.85	2.49	1.58	10.2	2.50
21	2.92	5.25	7.5	3.51	3.78	3.66	2.4	1.53	7.45	4.1
22	2.60	4.03	6.0	4.05	3.5	3.5	2.29	1.55	4.48	3.40
23	1.87	3.45	4.4	5.65	3.35	3.4	2.27	1.74	3.55	2.63
24	1.70	3.07	3.7	5.10	5.35	3.16	2.22	1.73	3.0	2.20
25	1.72	2.80	6.2	4.33	5.45	3.04	2.2	1.63	2.76	1.28
26	1.70	2.57	4.9	3.87	5.03	3.9	2.2	1.58	2.55	2.13
27	1.60	2.50	5.1	3.61	4.25	5.0	2.3	1.54	2.43	2.00
28	1.50	2.45	5.7	3.41	3.8	5.6	2.44	2.49	2.3	1.73
29	1.55	2.36	9.0	4.89	3.48	7.20	2.39	1.56	2.05	1.63
30	1.52	2.35	11.9	13.0	....	7.25	2.36	2.03	2.08	1.58
31	1.50	....	7.4	10.2	....	5.28	....	1.89	....	1.48

Daily discharge, in second feet, of South Fork of Licking River at Falmouth, Ky., for the years ending September 30, 1915 and 1916.

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1915				1915				1915			
1	....	58	1,050	11	....	125	485	21	....	1,500	680
2	....	45	620	12	....	135	360	22	....	1,320	510
3	....	34	485	13	....	228	280	23	....	1,600	360
4	....	1,000	340	14	....	224	240	24	....	1,600	280
5	....	960	2,530	15	....	538	170	25	....	1,100	228
6	....	650	2,400	16	....	538	200	26	....	650	182
7	....	385	1,320	17	....	1,100	132	27	96	650	146
8	....	592	1,600	18	....	3,560	99	28	81	538	48
9	....	216	810	19	....	2,030	360	29	66	385	109
10	....	152	650	20	....	1,100	810	30	45	360	96
								31	34	1,230	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1915-16										
1	260	66	360	....	9,100	920	1,500	340	200	280
2	8,910	53	280	....	7,600	920	1,350	320	146	196
3	3,890	45	260	....	3,240	1,000	1,230	280	300	128
4	1,600	40	240	2,400	2,030	1,140	1,000	710	132	109
5	1,050	40	240	1,810	1,600	1,050	845	740	128	75
6	775	40	240	1,600	1,500	1,500	710	680	260	66
7	592	20	224	1,920	1,600	4,760	620	485	1,230	66
8	485	30	204	1,500	1,600	3,720	740	385	810	61
9	410	34	200	1,410	1,320	2,530	1,230	300	1,140	48
10	360	30	174	1,810	1,230	1,600	1,410	260	810	40
11	260	20	163	....	1,140	1,230	1,320	240	680	36
12	220	22	200	....	1,140	1,050	1,050	220	810	38
13	170	24	385	....	8,000	845	845	204	740	40
14	229	45	538	....	6,000	960	710	163	565	48
15	189	1,810	280	....	3,770	4,760	680	160	435	48
16	200	3,240	1,600	....	2,530	2,660	565	152	340	26
17	132	2,030	....	1,700	2,530	2,030	620	146	510	40
18	99	1,050	....	1,230	2,800	1,700	620	106	410	66
19	360	5,900	....	880	2,270	1,600	565	66	4,400	66
20	810	5,900	....	1,100	1,700	1,410	460	90	13,000	460
21	680	3,090	....	1,140	1,410	1,320	410	75	6,400	1,700
22	510	1,600	....	1,600	1,140	1,140	360	81	2,020	1,050
23	189	1,100	....	3,720	1,000	1,050	340	142	1,230	538
24	128	775	1,320	2,940	3,400	845	320	138	740	320
25	135	620	4,760	1,920	3,400	775	320	106	592	310
26	128	485	2,660	1,500	2,800	1,500	320	90	485	300
27	96	460	2,940	1,230	1,810	2,800	360	78	435	240
28	66	435	3,890	1,050	1,410	3,720	435	81	360	138
29	81	385	10,800	2,660	1,140	5,000	410	84	260	106
30	72	385	....	....	....	4,000	385	260	280	90
31	66	....	....	....	....	2,500	....	196	....	61

NOTE.—Discharge for following days estimated because of backwater from Licking River, from weather records and record of stage of Licking River at Falmouth: Feb. 1, 2, 13, 14, Mar. 29-31, Apr. 1-2, and June 20-22, 1916. Discharge interpolated July 28, 1915, May 28 and July 25, 1916. Discharge, Dec. 17-23, 30, and 31, 1915, Jan. 1-3, 11-16, and 30-31, 1916, not estimated because of backwater.

Monthly discharge of South Fork of Licking River at Falmouth, Ky., for the years ending September 30, 1915 and 1916.

(Drainage area, 944 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1915					
August	3,560	34	794	0.841	0.97
September	2,530	48	586	.621	.69
1915-16					
October	8,910	66	747	.791	.91
November	5,900	20	992	1.05	1.17
December	....	163	....	....	....
January	....	880	....	....	....
February	....	1,000	2,770	2.93	3.16
March	....	775	2,000	2.12	2.44
April	....	320	724	.767	.86
May	740	66	238	.252	.29
June	....	128	1,330	1.41	1.57
July	1,700	26	219	.232	.27

CHAPTER VI.

KENTUCKY RIVER BASIN RECORDS

KENTUCKY RIVER AT FRANKFORT, KY.

This station was established March 18, 1905. It is located at the Government dam on the Kentucky River in the lower part of Frankfort, Ky., about 1 mile below the city highway bridge.

The channel is straight for 1,000 feet above and below the bridge. Both banks are high, rocky, covered with buildings, and do not overflow. The bed of the stream consists of rock, gravel, and sand and is free from vegetation and permanent. The water is approximately 15 feet deep and flows in one channel at all stages. The current is swift at high and very sluggish at low stages.

The lower portion of the gage is painted on the masonary walls of the locks at the left end of the dam, and the upper portion consists of staffs set firmly into the riprap on the left bank. During 1905 the gage was read by Mrs. C. H. McCrackin. The zero of the gage is 5.80 feet below the crest of the dam. No bench marks were established for the gage at the dam, which is maintained by the United States Army engineers. A bench mark is placed on the top of their hand rail at 40 feet from the initial point for soundings, marked with a cross in paint; elevation, 46.93 feet above the water surface when the gage at the locks read 7.40 feet.

The following discharge measurement was made April 16, 1906: Gage height 8.12 feet, discharge 10,800 second-feet.

Daily gage height, in feet, of Kentucky River at Frankfort, for 1905.

Day	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1905										
1	....	7.3	8.3	6.5	7.5	6.2	6.2	5.5	6.9	9.6
2	....	7.1	7.9	6.4	7.0	6.0	6.4	5.5	6.7	9.7
3	....	7.0	7.5	6.4	6.9	6.0	6.8	5.55	6.6	10.3
4	....	6.9	7.2	6.3	7.1	6.0	6.7	5.6	6.5	11.0
5	....	6.9	7.1	6.2	7.2	6.0	7.2	5.55	6.4	10.7
6	....	7.0	6.9	6.1	6.8	6.0	7.0	5.4	6.3	10.3
7	....	7.3	6.8	6.0	6.5	6.0	6.6	5.3	6.3	9.0
8	....	7.4	6.7	6.0	6.5	6.0	6.4	5.2	6.2	8.0
9	....	7.4	6.6	5.9	6.7	5.95	6.2	5.2	6.2	7.4
10	....	7.3	7.4	5.8	7.3	5.9	6.2	5.2	6.15	7.3
11	....	7.5	7.2	5.8	6.9	6.7	6.2	5.2	6.1	7.2

Daily gage height, in feet, of Kentucky River at Frankfirt, for 1915.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1905										
12	......	7.4	7.4	6.4	7.3	6.6	6.4	5.25	6.1	7.0
13	......	7.3	8.3	6.1	6.8	6.8	6.5	5.9	6.0	6.9
14	......	7.1	9.0	6.1	6.5	7.0	6.4	7.0	5.9	6.8
15	......	7.0	10.7	6.4	6.3	6.9	6.3	7.3	5.9	6.8
16	......	6.9	10.4	6.5	6.6	6.8	6.3	6.9	5.9	8.3
17	......	6.9	9.4	6.4	6.6	7.0	6.3	6.5	5.9	9.3
18	7.4	6.8	8.9	6.2	6.4	6.7	6.3	5.9	5.9	9.2
19	7.2	6.7	9.1	6.1	6.2	6.5	6.2	6.3	6.0	8.6
20	7.1	6.6	8.7	6.1	6.2	6.3	6.1	6.3	6.0	8.1
21	8.8	6.5	8.0	6.4	6.0	6.1	6.0	6.2	5.9	8.9
22	11.3	6.6	7.5	6.5	8.7	6.2	5.9	6.9	5.9	10.0
23	10.5	6.7	7.1	6.4	8.1	9.0	5.85	7.4	5.9	9.4
24	9.6	6.8	6.8	7.2	8.0	8.0	5.8	7.0	5.9	9.1
25	8.9	6.8	6.7	8.3	8.8	7.2	5.7	6.8	6.1	8.7
26	8.6	6.7	6.5	8.35	8.2	7.2	5.55	8.2	6.1	8.3
27	8.3	6.7	6.5	8.3	7.4	7.2	5.5	8.8	6.0	8.0
28	7.8	6.7	6.5	8.1	6.8	6.8	5.45	8.3	6.0	7.7
29	7.5	7.5	6.4	8.3	6.6	6.5	5.4	7.8	10.6	7.5
30	7.4	8.4	6.6	8.3	6.4	6.3	5.4	7.5	10.3	7.3
31	7.4	......	6.9	......	6.3	6.2	......	7.2	......	7.2

Day	Jan.	Feb.	Mar.	Apr.	May	June	July
1906							
1	7.0	7.3	7.4	17.5	6.4	7.0	6.2
2	6.9	7.45	7.8	14.5	6.3	7.0	6.1
3	7.0	7.5	9.8	12.7	6.4	7.1	6.0
4	8.3	7.55	10.8	10.0	6.6	6.6	5.9
5	8.8	7.3	10.3	8.9	6.8	6.4	5.8
6	8.1	7.0	10.2	8.3	6.8	6.1	5.8
7	7.7	6.85	9.3	8.0	6.8	6.1	6.1
8	7.5	6.8	8.5	8.0	7.8	6.0	5.9
9	7.3	6.6	8.1	7.9	7.7	5.9	5.8
10	7.1	6.45	7.8	7.8	7.5	5.9	5.8
11	7.0	6.4	7.6	7.8	7.5	5.9	5.9
12	7.2	6.4	7.4	8.0	7.2	5.9	6.2
13	7.7	6.4	7.3	8.0	6.9	5.8	6.2
14	9.2	6.4	7.9	7.9	6.8	6.5	6.0
15	10.2	6.4	8.3	7.5	6.6	6.4	6.0
16	10.3	6.4	10.2	7.8	6.4	6.4	5.9
17	9.9	6.4	10.4	8.5	6.4	6.3	6.5
18	9.2	6.35	9.6	8.4	6.2	6.3	6.7
19	8.6	6.35	9.0	7.9	6.1	6.4	6.5
20	8.0	6.3	9.6	7.5	6.1	6.3	6.2
21	7.8	6.3	9.3	7.3	6.1	6.2	6.5
22	7.5	6.5	8.8	7.1	6.0	6.1	......
23	8.0	6.9	8.4	6.95	5.9	5.9	......
24	8.05	7.3	8.0	6.85	5.9	6.2	......
25	7.6	8.0	8.0	6.8	5.85	6.1	......
26	7.3	7.7	8.4	6.7	6.0	6.0	......
27	7.1	7.5	9.4	6.5	5.9	6.0	......
28	7.0	7.3	9.3	6.4	5.85	6.1	......
29	6.9	......	9.3	6.4	7.0	6.2	......
30	6.8	......	14.3	6.4	6.7	6.2	......
31	6.9	......	21.1	......	6.4	......	......

DIX RIVER NEAR DANVILLE, KY.

This station was established March 18, 1905. It is located at the Danville city waterworks dam, about 5 miles east of the city of Danville.

Discharge measurements are computed by formula from the depth of water on the crest of the dam. Length of crest, 150 feet up to gage height 1.0 foot. Above 1.0 foot the crest is 200 feet long. The initial point for soundings is the crest of the dam.

The gage consists of a 2 by 4 inch pine stick nailed to a small sycamore tree about 100 feet above the above-mentioned dam on the left bank of the stream. Its zero is referred to the crest of the dam, which is said to be perfectly level. The gage was read during 1905 by Anton Rehm, the engineer of the waterworks.

Daily gage height, in feet, of Dix River near Danville, Ky., for 1905.

Day	May	June	July	Aug.	Day	May	June	July	Aug.
1905					1905				
1	0.41	0.10	0.19	0.06	16	0.46	0.19	0.11	0.5
2	.36	.08	.18	.05	17	.48	.17	.1	.32
3	.3	.06	.48	.04	18	.45	.15	.8	.2
4	.25	.04	.45	.03	19	.4	.14	.7	.14
5	.24	.03	.29	.02	20	.35	.15	.6	.11
6	.23	.02	.22	.02	21	.26	.14	.5	.06
7	.23	.02	.2	.01	22	.23	.25	2.0	.05
8	.26	.01	.25	.21	23	.20	.9	.7	.09
9	.25	.01	.21	.26	24	.18	.75	.5	1.98
10	.25	.01	.2	.22	25	.15	.8	.47	.88
11	.55	.02	.21	.22	26	.14	.55	.32	1.21
12	.4	.5	.16	.4	27	.13	.42	.22	......
13	.35	.24	.13	.7	28	.45	.32	.15	......
14	.35	.18	.1	.42	29	.26	.25	.11	......
15	.45	.22	.09	.31	30	.21	.22	.09	......
					31	.15	......	.07	......

DIX RIVER NEAR BURGIN, KY.

Location.—At covered wooden highway bridge on Burgin and Buena Vista pike, 3¾ miles due east of Burgin, Mercer County. Kennedy's mill is one-fourth mile above station.

Drainage Area.—395 square miles (86 per cent measured

on topographic maps and 14 per cent on map of Kentucky, compiled by United States Geological Survey, scale 1:500,000).

Records Available.—July 2, 1910, to July 16, 1911; October 1, 1911, to September 30, 1920.

Gage.—Staff gage attached to right upstream wing wall of bridge near face of abutment; read twice daily by C. P. Kennedy and Frank Martin. Soundings taken at the measuring section indicates that the zero of the gage as replaced by the observer on February 15, 1913, is approximately 0.2 foot below zero of gage installed when station was established. Gage readings subsequent to February 15, 1913, refer to a datum which is about 0.2 foot below datum of original gage.

Discharge Measurements.—Made from upstream side of bridge, from a boat, or by wading.

Channel and Control.—Probably permanent except during extreme floods. At stages above low water growth of foliage on trees and brush at the control may affect the stage-discharge relation to a small extent.

Extremes of Discharge.—1910-20: Maximum stage recorded 29.0 feet about 3 a. m. January 22, 1917, (discharge, 27,500 second-feet); minimum stage 2.60 feet at 6 a. m. June 19, 1918, (discharge 0.8 second-feet).

Ice.—Ice forms only during severe winters.

Accuracy.—Stage-discharge relation practically permanent; not affected by ice during the year. Rating curve well defined up to 455 second-feet and fairly well defined between 455 and 12,000 second-feet; extended above 12,000 second-feet. Gage read twice daily to quarter tenths. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

Cooperation.—Station maintained in cooperation with Kentucky Geological Survey.

Discharge measurements of Dix River near Burgin, Ky., during the years ending September 30, 1910-1920.

No.	Date	Made by—	Width	Area of Section	Gage Height	Discharge
	1910		Feet	Sq. Ft.	Feet	Sec.-ft.
1	July 18	A. F. Foerste	141	898	7.65	1,650
2	19	G. T. Bagard	141	715	6.44	966
3	20	G. T. Bagard	141	607	5.64	653
4	20	G. T. Bagard	141	574	5.44	600
5	21	G. T. Bagard	141	519	5.10	454
6	Aug. 14	A. F. Foerste	....	....	3.30	*50.4
7	25	G. T. Bagard	143	372	4.30	219
8	Sept. 2	L. B. Herrington	142	1,610	12.35	6.260
9	20	L. B. Herrington	142	1,280	10.20	3,870
	1915					
10	Mar. 2	Ellsworth & Sellier	....	....	4.02	101
11	18	C. E. Ellsworth	....	....	5.14	341
	1916					
12	Apr. 27	A. H. Horton	....	....	4.07	111
13	Sept. 18	B. E. Jones	....	....	2.82	3.1
	1917					
14	Jan. 23	Jones & Sellier	....	....	11.68	4,950
15	July 19	Jones & Sellier	....	....	2.86	3.4
	1918					
16	June 11	Hopkins & Kidwell	....	....	3.14	12.9
	1920					
17	May 11	W. R. King	....	....	6.07	750

*Large cross section dead water not measured.

Daily gage height, in feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.

(C. P. Kennedy, observer.)

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1910				1910				1910			
1	....	5.05	7.70	11	5.30	3.60	4.75	21	5.00	4.60	7.55
2	3.90	4.50	10.35	12	5.10	3.40	4.55	22	4.65	9.05	6.40
3	3.80	4.20	8.45	13	5.00	3.30	4.65	23	4.50	5.60	5.90
4	5.85	4.00	8.10	14	6.90	3.30	4.30	24	4.30	5.05	6.05
5	5.30	4.00	11.05	15	6.50	3.30	4.05	25	4.10	4.45	6.55
6	8.30	3.80	10.00	16	9.00	3.28	3.88	26	3.95	5.20	10.65
7	7.50	3.80	8.25	17	11.15	3.28	3.75	27	3.90	5.05	7.45
8	9.00	3.80	6.05	18	7.82	3.30	3.70	28	4.15	6.50	6.45
9	6.80	3.60	5.55	19	6.00	3.28	8.80	29	5.10	5.50	5.85
10	5.70	3.60	5.00	20	5.35	3.70	11.50	30	6.25	5.15	5.50
								31	6.50	4.90	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1910-11										
1	5.25	3.70	6.05	6.5	8.95	5.05	4.3	17.35	3.65	3.3
2	4.90	3.80	5.70	9.2	7.3	4.95	4.2	9.95	3.65	3.2
3	4.45	3.70	5.30	8.1	6.85	4.8	4.35	7.85	3.6	3.1
4	4.12	....	5.05	7.3	14.05	4.75	8.7	7.4	3.45	3.0
5	4.00	....	5.00	7.1	10.4	4.7	7.6	6.05	3.35	3.0
6	4.20	....	7.85	6.9	9.5	4.75	6.5	5.6	3.8	3.0
7	5.35	....	7.45	6.6	8.65	4.9	6.95	5.3	3.85	3.0

Daily gage height, in feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

(C. P. Kennedy, observer.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July
1910-11										
8	8.75	3.40	6.45	5.75	7.75	5.35	8.35	4.95	3.65	2.95
9	6.65	3.45	5.80	5.8	7.9	5.45	7.3	4.7	3.5	2.9
10	5.75	3.50	5.70	5.7	7.15	5.3	6.65	4.55	3.45	3.2
11	5.30	3.40	6.00	5.65	6.85	5.1	6.5	4.4	3.4	3.3
12	5.05	3.50	6.00	5.45	6.45	4.95	6.8	4.3	3.2	3.55
13	4.90	3.50	5.60	5.35	6.1	4.8	8.7	4.25	3.1	4.4
14	4.75	3.35	5.00	5.3	5.8	4.6	8.25	4.15	3.05	4.1
15	4.65	3.20	4.80	5.3	5.65	4.6	10.55	4.05	3.0	4.7
16	4.60	3.20	4.80	5.2	5.3	4.55	8.5	3.95	3.0	4.2
17	4.35	3.30	4.60	5.1	5.0	4.5	6.65	3.9	3.0	......
18	4.05	3.35	4.60	4.95	4.85	4.5	6.05	3.85	3.0	......
19	4.00	3.35	4.60	4.95	5.6	4.45	5.95	3.8	3.05	......
20	3.85	3.30	4.55	4.85	12.55	4.5	5.65	3.8	4.75	......
21	3.80	3.00	4.55	4.8	10.5	4.4	5.55	3.75	4.6	......
22	3.90	3.00	4.50	8.45	8.25	4.35	5.45	4.4	3.9	......
23	4.05	3.15	4.55	8.5	7.55	4.35	5.35	4.6	3.45	......
24	4.25	3.10	4.75	6.9	6.45	4.25	5.2	4.0	3.35	......
25	4.10	3.15	4.85	6.55	6.0	4.2	5.0	3.95	3.3	......
26	3.95	3.15	4.80	6.65	5.8	4.15	4.75	3.85	3.3	......
27	3.90	3.55	5.05	7.15	5.5	4.3	4.6	3.75	3.3	......
28	3.80	9.00	5.30	7.9	5.35	4.3	4.65	3.65	3.9	......
29	3.70	9.15	5.75	8.1	......	4.25	4.9	3.6	3.9	......
30	3.80	6.45	12.55	11.45	......	4.3	5.4	3.85	3.55	......
31	3.75	......	9.90	9.15	......	4.3	......	3.75	......	......

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1911-12												
1	3.35	3.4	4.85	10.2	6.55	6.95	6.2	7.65	3.65	4.3	3.4	3.7
2	3.4	3.3	4.7	8.8	6.4	6.4	15.6	6.35	......	3.9	3.3	3.6
3	3.35	3.3	4.3	8.0	6.4	5.95	12.6	5.95	......	3.7	3.2	3.4
4	3.5	3.3	4.15	7.5	6.15	5.7	9.1	5.35	......	5.2	3.2	3.9
5	3.9	3.35	4.1	7.05	5.65	5.65	8.5	5.5	......	5.6	3.1	3.8
6	3.6	5.35	4.05	6.9	5.25	5.7	7.5	6.9	......	5.1	3.0	3.6
7	3.55	10.85	3.85	6.6	5.0	5.85	6.45	8.2	......	5.5	3.4	3.8
8	3.5	6.85	3.8	6.1	4.7	10.7	5.85	8.1	......	5.5	3.3	3.7
9	3.4	5.55	3.7	5.75	4.6	12.2	5.45	7.15	......	4.9	3.7	3.7
10	3.55	5.35	3.7	5.65	4.4	10.0	5.2	6.5	3.3	4.2	5.5	3.6
11	3.55	5.1	3.8	5.35	4.35	8.4	5.0	5.9	3.3	8.7	5.0	3.4
12	3.5	10.1	4.55	5.2	4.4	10.8	4.9	14.8	3.3	6.0	4.7	3.3
13	5.05	6.65	9.7	4.9	4.35	10.8	4.9	9.4	3.3	5.5	4.1	3.2
14	4.9	6.35	11.6	4.8	4.3	11.8	5.55	7.65	3.3	5.1	3.8	3.0
15	5.05	5.75	15.95	4.7	4.2	17.6	5.4	6.75	3.3	4.6	3.5	3.0
16	5.05	5.6	13.9	4.7	4.1	12.0	5.25	6.1	......	5.4	3.3	2.9
17	5.1	5.55	10.85	4.5	4.05	8.5	5.35	5.35	3.3	5.1	3.3	2.9
18	6.0	9.5	7.7	4.35	4.05	7.0	5.7	4.85	3.3	8.0	3.2	2.9
19	5.55	8.75	6.7	18.8	4.0	6.75	5.45	4.55	3.4	6.6	3.8	2.9
20	5.15	6.8	6.6	11.4	4.5	6.45	5.15	4.25	3.55	6.1	4.6	3.0
21	4.9	6.4	6.95	7.7	12.8	6.05	4.95	4.0	3.65	4.8	4.8	2.9
22	4.75	6.1	7.0	6.15	11.4	5.95	5.15	3.85	5.45	4.6	4.8	3.0
23	4.5	5.8	7.1	6.75	9.2	6.7	5.05	3.7	4.0	5.8	4.8	3.0
24	4.15	5.55	7.65	6.45	8.4	12.8	4.85	3.7	3.95	5.0	4.8	5.0
25	4.1	6.35	9.25	5.9	7.55	12.0	4.7	3.6	3.85	4.6	4.4	4.6
26	3.85	5.0	8.8	5.55	11.8	9.7	4.7	3.45	3.7	4.3	4.1	4.0

Daily gage height, in feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

(C. P. Kennedy, observer.)

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1911-12												
27	3.8	4.9	22.65	5.5	11.0	8.6	4.7	3.4	3.55	3.9	3.7	3.6
28	3.75	4.75	11.25	5.65	9.4	7.05	7.85	3.4	3.5	3.7	4.5	3.4
29	3.7	4.7	8.25	6.05	8.1	6.8	10.6	3.8	3.9	3.5	4.5	3.4
30	3.6	5.05	8.0	6.55	......	12.0	10.6	3.8	4.25	3.4	3.9	3.3
31	3.45	......	14.75	6.8	......	7.95	......	3.8	......	3.4	3.8	......
1912-13												
1	3.2	2.8	3.3	8.7	7	8.0	6.3	5.1	6.1	3.3	2.8	2.7
2	3.2	2.9	3.4	8.3	7	7.3	6.0	4.9	5.9	3.3	2.8	2.7
3	3.2	2.9	4.2	7.8	6	6.6	5.5	4.9	6.9	4.1	2.8	2.7
4	3.2	3.0	4.5	7.9	7	5.4	5.1	4.9	6.1	3.9	3.0	2.7
5	3.1	3.3	5.0	7.9	8	5.4	5.2	4.8	5.7	3.6	3.0	2.7
6	3.1	3.4	12.2	11.6	9	5.3	5.1	4.7	5.4	3.4	2.8	2.7
7	3.0	3.6	8.9	26.0	8	5.4	5.1	4.5	5.0	3.3	2.8	2.7
8	3.0	3.6	6.9	28.9	7	5.5	5.0	4.3	4.7	3.3	2.8	2.7
9	3.0	3.8	5.8	22.3	7	5.4	5.0	4.1	4.3	3.3	2.8	2.7
10	3.0	4.7	5.5	*17	6	5.3	5.4	4.1	4.1	3.3	2.8	2.7
11	3.0	4.6	5.4	13	8	5.2	5.5	3.9	4.0	3.2	2.8	2.7
12	3.0	4.5	5.4	26	7	5.0	5.5	3.9	4.0	3.2	2.8	2.7
13	3.0	4.4	5.2	19	6	5.7	5.3	3.9	3.8	3.1	2.8	2.7
14	3.0	4.3	5.2	13	*6	13.4	5.2	3.9	3.6	3.0	2.8	2.7
15	2.9	4.1	5.1	10	5.3	10.2	4.9	3.8	3.5	2.8	2.8	2.7
16	2.9	3.8	5.1	8	5.3	7.7	4.8	3.8	3.3	2.8	2.8	2.7
17	2.9	3.8	5.0	8	5.2	6.0	4.6	3.8	3.3	2.8	2.8	2.7
18	2.9	3.8	5.0	12	5.2	5.8	4.5	3.7	3.3	2.8	2.8	2.7
19	2.9	3.8	5.0	10	5.2	5.7	4.3	3.7	3.3	2.8	2.8	2.7
20	2.9	3.8	5.0	10	5.2	5.5	4.1	3.9	3.3	2.8	2.9	2.7
21	2.9	3.7	4.9	12	5.2	5.4	4.0	4.6	3.2	2.8	3.6	2.7
22	2.9	3.6	4.9	11	5.2	6.8	4.0	7.7	3.3	2.8	3.6	2.7
23	2.9	3.6	4.9	10	5.1	6.7	4.0	7.3	3.3	2.8	4.5	2.7
24	2.9	3.5	4.9	17	5.1	6.5	3.9	8.2	8.0	2.8	4.5	2.7
25	2.9	3.4	4.8	13	5.6	6.6	4.0	6.8	5.8	2.8	4.2	2.7
26	2.9	3.4	4.8	11	6.3	24.5	4.4	6.6	5.1	2.8	4.0	2.7
27	2.8	3.3	4.8	10	8.0	27.6	5.6	6.5	4.1	3.4	3.6	2.7
28	2.8	3.3	5.4	9	8.8	15.6	6.7	6.5	3.8	3.2	3.3	2.7
29	2.8	3.3	5.8	9	......	9.8	5.7	6.5	3.5	3.0	3.0	2.7
30	2.8	3.3	5.8	8	......	8.5	5.7	6.4	3.4	3.0	2.8	2.7
31	2.8	......	9.2	7	......	7.1	......	6.4	......	2.8	2.7	......
1913-14												
1	2.8	3.3	5.3	......	6.7	5.7	6.8	5.0	3.4	2.8	3.3	3.8
2	2.8	3.3	5.6	......	6.6	5.4	8.6	4.8	3.6	2.8	3.8	3.8
3	2.8	3.3	5.8	......	6.5	5.2	7.5	4.5	3.6	2.8	3.9	3.8
4	2.8	3.3	5.5	......	6.5	5.6	6.9	4.4	3.9	2.8	3.9	3.6
5	2.8	3.3	5.4	......	6.4	5.5	6.5	16.2	4.4	2.8	3.9	3.8
6	2.8	3.3	5.1	......	6.3	5.4	6.3	13.8	4.8	2.8	3.9	3.8
7	2.8	3.7	6.3	......	7.0	5.3	5.9	9.5	6.2	2.8	3.9	6.0
8	2.8	3.7	6.0	......	8.1	5.3	6.2	7.8	4.6	2.8	3.9	10.6
9	2.8	3.9	5.6	......	7.5	5.2	6.4	6.2	4.4	2.8	3.9	6.8
10	2.8	3.7	5.3	......	6.2	5.0	6.1	5.9	3.8	2.8	4.0	6.8
11	2.8	3.5	5.2	......	5.9	5.8	5.8	5.8	3.5	2.8	4.0	9.4
12	2.8	3.5	4.9	......	5.6	13.0	5.5	5.5	3.3	2.8	4.9	6.3
13	2.8	3.4	4.9	......	6.2	9.9	5.3	5.3	3.0	2.8	5.0	6.3
14	2.8	3.4	4.7	......	10.3	8.1	5.0	5.0	3.0	2.8	6.4	5.6
15	2.8	3.4	4.5	......	8.2	7.5	4.9	4.8	3.0	4.6	4.8	5.4

*Gage washed out; gage heights estimated by observer Jan. 10 to Feb. 14.

NOTE.—No ice reported. Discharge relation probably not affected by ice. See "Accuracy" in station description.

Daily gage height, in feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1913-14												
16	2.8	3.8	4.9	......	7.9	7.2	6.3	4.5	3.0	5.0	4.0	5.0
17	2.8	4.0	4.7	......	6.8	6.9	6.0	4.2	3.0	4.3	3.9	5.0
18	2.8	4.6	4.6	......	9.8	6.5	5.9	4.2	3.0	4.0	3.7	4.8
19	3.8	5.6	4.5	......	14.9	6.3	5.7	4.1	3.0	3.8	3.6	4.6
20	3.8	4.6	4.5	......	11.8	6.0	5.6	4.0	3.0	3.3	3.4	4.2
21	4.0	4.6	4.4	......	8.9	5.8	7.3	4.0	3.0	3.0	3.4	4.0
22	4.3	4.8	4.8	......	7.6	5.5	6.9	3.9	3.0	3.0	3.4	4.1
23	3.9	5.9	4.9	......	6.8	5.3	6.5	3.6	3.0	3.0	3.4	3.8
24	3.7	5.4	8.0	......	6.6	5.4	6.1	3.3	3.0	3.0	6.0	3.7
25	3.6	5.5	8.1	......	6.3	5.6	5.8	3.9	3.0	3.0	5.8	3.7
26	3.6	5.5	7.9	......	6.0	4.9	5.8	3.9	3.0	3.0	5.4	3.7
27	3.5	5.4	7.7	......	5.9	5.3	5.6	3.9	3.0	3.0	5.1	3.3
28	3.3	5.4	7.4	......	5.9	5.3	5.5	3.9	3.0	3.0	4.8	3.3
29	3.3	5.3	7.2	......	......	5.2	5.3	3.8	3.0	3.3	4.5	......
30	3.3	5.3	6.9	......	......	5.6	5.1	4.4	3.0	3.3	4.0	3.2
31	3.3	......	6.6	......	......	7.7	......	4.3	......	3.3	4.0	......
1914-15												
1	3.2	4.3	4.5	......	16.8	4.1	4.95	3.48	5.25	6.4	3.62	4.10
2	3.2	4.0	4.6	......	12.0	4.0	4.95	3.42	5.6	9.0	4.95	4.5
3	3.2	4.0	4.6	......	8.4	4.0	4.85	3.50	5.2	7.1	6.1	3.92
4	3.2	4.0	8.4	......	7.4	3.9	4.85	3.45	5.0	7.3	5.45	3.82
5	3.2	4.0	9.6	......	7.4	4.4	4.8	3.46	4.7	8.7	4.7	4.7
6	3.2	4.0	......	......	9.6	8.9	4.75	3.95	3.95	7.9	4.45	6.8
7	3.2	3.9	8.3	......	7.9	6.8	4.7	3.90	3.85	6.6	4.00	7.5
8	3.2	3.9	7.8	......	7.0	5.8	4.65	3.80	4.28	12.2	3.80	6.2
9	6.4	3.9	7.6	......	6.3	5.5	4.65	4.15	4.04	8.9	3.78	5.8
10	10.4	3.9	7.4	......	5.7	5.0	4.65	4.00	4.35	6.6	4.25	5.35
11	7.5	3.9	6.8	7.7	5.35	4.85	4.65	3.95	4.02	6.8	7.7	5.1
12	6.8	3.9	6.0	13.1	5.2	4.65	5.4	3.92	3.88	6.6	8.8	4.9
13	6.0	3.9	5.8	10.6	5.0	4.5	5.3	3.90	3.72	12.5	6.2	4.75
14	16.4	3.6	5.4	8.5	4.85	4.55	5.1	3.82	3.65	8.1	4.8	4.55
15	17.3	3.5	5.1	6.8	4.8	4.3	5.0	3.68	3.95	6.4	4.42	4.30
16	13.6	3.5	4.9	6.2	5.9	5.3	4.85	3.62	7.9	5.7	6.2	4.01
17	......	3.5	5.6	6.6	4.95	4.7	4.7	3.62	6.2	5.05	5.6	3.76
18	12.6	3.5	5.7	7.5	4.75	5.0	4.6	3.68	5.1	4.85	6.4	3.55
19	10.7	3.5	5.7	9.4	4.6	5.5	4.6	3.65	4.8	4.55	5.5	3.39
20	9.4	3.5	12.6	8.0	4.4	5.15	4.6	3.60	7.0	4.7	5.2	3.28
21	6.8	3.5	10.8	7.2	4.4	5.5	4.30	3.48	6.9	4.55	6.3	3.40
22	5.9	3.5	8.8	7.1	4.3	5.4	4.20	3.72	7.2	4.35	6.6	3.42
23	5.6	3.5	7.4	10.9	4.2	5.5	4.18	4.75	5.8	4.15	6.4	3.38
24	5.2	3.3	7.3	8.6	4.35	5.8	4.20	5.50	5.35	3.85	6.4	3.40
25	5.0	3.3	10.5	7.4	4.4	6.4	4.20	6.4	5.0	3.65	6.6	3.39
26	5.0	3.3	9.4	6.9	4.4	5.9	4.15	5.2	4.30	3.54	5.6	3.38
27	4.8	3.3	7.4	6.3	4.25	5.7	3.85	10.4	4.10	3.42	4.55	3.34
28	4.6	3.3	......	5.6	4.2	5.5	3.68	9.3	4.15	3.48	4.37	3.30
29	4.5	3.3	......	6.0	......	5.4	3.62	7.4	4.05	3.48	4.32	3.28
30	4.0	4.5	......	5.4	......	5.2	3.52	6.6	4.18	3.38	4.36	3.18
31	4.3	......	......	6.1	......	5.15	......	6.4	......	3.48	4.20	......
1915-16												
1	11.40	3.55	4.72	......	13.5	5.65	6.0	4.12	5.52	3.32	3.65	3.0
2	11.78	3.68	4.58	......	8.95	7.3	5.65	4.0	4.7	3.28	3.52	3.4
3	7.16	3.78	4.55	......	7.65	7.5	5.55	3.96	4.4	3.28	3.48	3.2
4	6.01	3.70	4.51	......	6.8	6.65	5.35	4.05	4.05	3.18	3.52	3.4
5	11.42	3.68	4.44	......	6.55	6.35	5.15	6.95	3.85	3.15	3.52	3.3
6	9.26	3.65	4.38	......	6.3	6.15	4.85	5.32	3.8	3.08	3.42	3.18
7	6.68	3.62	4.29	......	7.4	8.0	4.65	4.82	3.78	3.02	3.32	3.12

NOTE.—Gage heights not recorded Oct. 17, Dec. 6, 28-31, and Jan. 1-10.

Daily gage height, in feet, of Dix River at Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
8	5.55	3.60	4.2	......	6.55	8.3	6.6	4.48	5.08	3.10	3.40	3.08
9	5.00	3.62	4.14	......	6.3	6.85	7.3	4.25	4.62	3.1	4.45	3.0
10	4.56	3.55	4.10	......	7.3	6.25	6.55	4.02	4.25	3.0	4.48	3.0
11	4.70	3.56	4.14	......	7.1	5.95	6.1	3.92	4.08	3.0	3.9	3.0
12	4.52	3.59	6.10	12.0	6.6	5.75	5.75	3.78	3.85	3.0	3.62	2.98
13	4.4	3.66	6.58	16.25	8.45	5.45	5.5	3.71	3.72	3.02	3.58	2.95
14	4.28	4.20	5.90	10.45	8.8	5.25	5.4	3.66	3.62	3.4	3.52	2.98
15	4.14	10.62	5.56	7.8	7.55	5.5	4.9	3.65	3.62	3.3	3.58	2.92
16	3.98	10.36	13.4	7.05	7.05	6.85	4.9	3.6	4.02	3.22	3.55	2.9
17	3.88	7.01	20.78	6.65	6.9	6.55	4.65	3.58	4.45	3.18	3.6	2.9
18	3.95	6.15	19.10	5.95	6.55	6.35	4.65	3.52	5.06	3.08	4.02	2.88
19	4.30	11.50	12.00	5.6	6.3	6.25	4.55	3.45	5.52	5.75	3.8	2.82
20	7.55	9.98	8.71	5.8	5.7	6.0	4.50	3.40	5.8	7.45	3.65	2.8
21	5.85	7.50	7.11	5.48	5.65	5.65	4.40	3.4	4.9	6.15	3.45	2.8
22	5.00	6.60	6.62	8.0	5.35	5.55	4.30	3.45	4.48	6.68	3.35	2.79
23	4.75	6.02	6.35	9.4	5.25	5.35	4.25	3.42	4.2	5.65	3.3	2.76
24	4.54	5.62	6.00	7.8	8.85	4.95	4.15	3.35	4.02	4.80	3.2	2.75
25	4.38	5.30	6.45	6.75	8.45	4.85	4.10	4.15	3.88	4.50	3.2	2.72
26	4.31	5.05	8.15	6.3	7.45	4.95	4.10	4.1	3.7	4.7	3.2	2.8
27	4.22	4.92	9.00	5.95	6.65	7.35	4.12	3.7	3.62	4.95	3.2	2.8
28	4.10	4.92	8.16	5.75	6.1	8.7	4.22	3.58	3.58	4.45	3.15	2.91
29	3.92	4.90	12.50	8.75	5.75	7.7	4.42	3.52	3.45	4.05	3.1	2.98
30	3.76	4.82	12.6	9.05	......	6.85	4.25	3.62	3.38	4.05	3.05	3.16
31	3.64	......	8.85	7.75	......	7.0	......	7.65	......	3.85	3.0	......
1916-17												
1	3.11	3.22	3.40	5.50	6.60	12.80	5.15	4.65	3.70	3.11	3.52	3.40
2	3.39	3.20	3.36	5.50	7.20	9.50	11.30	4.48	3.88	3.09	3.45	3.38
3	3.05	3.18	3.34	8.45	6.50	13.20	9.30	4.25	7.00	3.05	3.41	3.60
4	3.02	3.15	3.34	16.50	6.05	10.90	7.25	4.12	5.30	2.99	3.40	4.05
5	3.00	3.15	3.39	17.35	5.45	9.15	6.60	3.98	4.75	2.98	3.36	3.95
6	2.98	3.12	3.36	12.60	5.05	8.15	8.10	3.92	4.35	2.95	3.32	3.82
7	2.95	3.10	3.35	8.80	5.15	8.35	7.30	3.96	4.22	2.95	3.20	3.68
8	2.41	3.10	3.42	7.45	4.95	12.75	6.52	3.92	4.80	2.95	3.24	3.58
9	3.00	3.10	3.50	6.65	4.85	9.85	6.45	3.84	4.45	2.92	3.20	3.48
10	2.98	3.05	3.50	6.15	4.72	8.05	6.10	3.80	6.10	2.86	3.16	3.38
11	2.95	3.05	3.46	5.70	4.70	7.10	5.70	3.80	5.65	2.80	3.11	3.35
12	2.94	3.02	3.39	5.32	4.60	7.15	5.35	3.79	5.10	2.80	3.06	3.28
13	2.92	3.02	3.42	5.12	4.25	8.50	5.38	3.75	4.65	2.80	3.02	3.19
14	2.90	3.00	3.46	4.88	4.25	7.85	5.45	3.71	4.35	2.80	3.00	3.15
15	2.90	2.98	3.44	4.88	4.50	7.65	5.35	3.66	4.15	2.82	2.98	3.11
16	2.94	2.98	3.40	5.20	7.30	6.65	5.05	3.61	4.02	2.85	3.00	3.06
17	3.00	2.98	3.36	5.25	6.70	9.70	4.85	3.59	3.91	2.85	3.02	3.05
18	3.10	2.98	3.40	5.20	6.15	10.20	4.68	3.54	3.78	2.85	3.01	3.01
19	3.55	3.00	3.36	5.75	6.40	7.35	4.58	3.49	3.68	2.85	3.08	2.94
20	4.82	3.01	3.38	5.35	10.40	6.60	4.48	3.44	3.10	2.85	3.10	2.90
21	5.82	3.05	3.42	7.45	9.15	6.30	4.35	3.40	3.52	3.32	3.12	2.94
22	4.55	3.06	4.00	25.00	7.25	6.65	4.22	3.38	3.44	3.92	3.20	2.90
23	3.81	3.04	5.95	13.90	6.70	6.80	4.22	3.38	3.40	3.88	4.20	2.88
24	3.90	3.14	5.55	8.10	10.75	15.85	4.12	3.34	3.32	3.72	5.95	2.88
25	3.72	3.31	5.45	7.40	8.65	9.35	4.08	3.31	3.32	3.58	6.50	2.88
26	3.58	3.34	5.65	6.75	7.20	7.45	3.98	3.20	3.24	3.58	4.65	2.82
27	3.48	3.38	6.10	6.20	6.45	6.65	3.90	3.24	3.14	4.90	4.05	2.85
28	3.42	3.64	11.15	6.02	13.40	6.80	3.85	3.35	3.15	5.45	3.90	3.02
29	3.36	3.58	9.60	6.60	......	6.15	4.02	3.88	3.16	4.65	3.75	3.22
30	3.31	3.48	7.30	6.35	......	5.70	4.92	3.75	3.12	3.78	3.52	4.05
31	3.26	......	6.05	6.00	......	5.35	......	3.65	......	3.60	3.48	......

Daily gage height, in feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
1	3.90	5.05	3.60	5.25	7.00	5.25	4.00	4.52	3.45	3.95	3.55	2.90
2	3.65	4.50	3.75	5.15	6.18	5.08	4.10	4.20	3.32	3.82	3.48	2.90
3	3.58	4.25	3.82	5.00	5.88	4.75	4.20	4.10	3.30	3.50	3.38	2.80
4	3.35	4.05	3.75	5.10	6.48	4.92	7.65	4.00	3.20	3.28	3.15	2.80
5	3.20	3.92	3.65	5.10	5.45	5.68	6.50	3.50	3.18	3.15	3.12	2.85
6	3.10	3.82	3.60	5.22	5.45	6.50	5.30	3.60	3.10	3.00	3.00	2.85
7	3.04	3.74	3.58	10.10	6.50	6.40	5.02	3.72	3.28	2.90	3.02	2.85
8	3.15	3.68	3.60	7.40	8.50	5.32	4.72	3.65	3.28	3.00	3.15	2.85
9	3.05	3.64	3.55	6.12	9.80	5.25	5.48	3.55	3.15	3.30	3.15	2.85
10	3.05	3.58	3.50	5.42	8.98	5.05	5.20	3.42	3.10	3.50	3.05	2.85
11	3.08	3.54	3.45	5.28	7.72	4.85	4.60	4.08	3.10	3.28	2.95	2.85
12	3.05	3.50	3.40	5.50	6.90	4.95	4.62	4.30	3.10	3.22	2.90	2.85
13	3.00	3.50	3.48	6.90	6.75	5.08	4.48	5.02	3.05	3.10	2.88	2.85
14	3.01	3.45	3.52	7.05	6.20	5.08	4.32	8.98	3.02	2.95	2.82	2.85
15	3.12	3.46	3.48	8.25	6.10	5.00	4.25	6.95	2.98	2.85	2.85	2.85
16	3.15	3.45	3.40	11.00	6.15	4.75	4.10	5.12	2.92	2.80	2.85	2.85
17	3.18	3.46	3.45	9.70	5.65	4.58	4.15	4.90	2.82	2.85	3.00	2.85
18	3.30	3.42	3.52	7.75	5.32	4.45	4.02	4.35	2.70	2.70	2.90	2.85
19	5.05	3.4	3.58	6.50	5.18	4.38	3.98	4.35	2.68	2.70	2.92	2.85
20	5.35	3.36	3.85	6.05	9.70	4.30	3.85	4.65	2.70	2.75	2.88	2.85
21	4.80	3.35	4.18	6.35	10.30	4.32	5.95	4.75	2.80	2.75	2.82	2.85
22	4.45	3.32	4.32	....	7.15	4.30	6.75	5.30	2.80	2.90	2.78	2.85
23	4.08	3.30	5.30	....	6.30	4.32	5.35	4.92	2.80	3.00	2.70	2.85
24	3.88	3.25	5.28	....	6.05	4.28	4.90	4.50	2.80	3.82	2.75	2.85
25	3.72	3.20	5.65	5.48	5.62	4.48	4.85	4.22	2.90	5.58	2.75	2.85
26	3.62	3.18	6.48	5.90	5.70	5.30	4.72	4.05	3.00	5.20	2.72	2.85
27	3.58	3.18	5.90	11.90	5.92	5.05	5.35	3.85	3.00	4.98	2.78	2.85
28	3.55	3.25	5.58	17.65	5.48	4.62	5.25	3.75	3.15	3.75	2.85	2.85
29	3.52	3.35	5.15	15.75	....	4.48	4.85	3.65	3.32	3.78	2.80	2.85
30	5.60	3.55	5.02	8.75	....	4.28	4.72	3.58	3.15	3.72	2.92	....
31	6.00	....	5.25	7.98	....	4.10	....	3.50	....	3.60	3.02	....
1918-19												
1	2.85	3.70	3.65	20.80	4.65	6.25	4.62	4.32	4.85	3.70	3.05	2.80
2	2.85	4.15	3.65	20.80	4.50	6.42	4.45	6.20	4.55	3.60	3.22	2.80
3	2.85	4.00	3.60	11.40	4.35	5.75	4.40	5.32	4.35	3.48	3.00	2.75
4	2.85	3.75	3.52	7.55	4.32	5.55	4.20	4.80	4.30	3.35	2.95	2.80
5	2.85	3.55	3.50	6.55	4.30	5.40	4.20	4.80	4.35	3.30	3.52	2.75
6	2.85	3.45	3.50	6.05	4.20	8.38	4.20	4.28	4.20	3.30	3.72	2.80
7	2.85	3.38	3.40	5.48	4.12	7.60	4.10	4.00	4.05	3.28	4.65	2.80
8	2.85	3.25	3.40	5.52	4.05	6.60	4.20	4.10	3.88	3.02	4.28	2.75
9	2.85	3.25	3.38	5.75	4.05	10.35	4.10	9.38	4.88	3.28	3.98	2.75
10	2.85	3.20	3.42	5.50	4.00	8.70	4.65	12.00	5.42	3.10	3.78	2.65
11	2.85	3.18	3.60	5.25	3.98	7.30	8.45	8.25	4.68	3.10	3.55	2.70
12	2.85	3.10	4.28	4.92	3.90	6.95	8.10	6.20	4.15	3.15	3.42	2.70
13	2.85	3.05	4.95	4.82	3.88	5.20	6.10	6.32	5.28	3.28	3.32	2.65
14	2.85	3.00	5.38	4.70	3.95	5.70	5.50	5.55	4.70	3.20	3.28	2.70
15	2.85	2.95	8.80	4.85	3.88	5.52	5.15	5.30	4.20	3.25	3.25	2.65
16	2.85	2.80	6.50	5.08	4.15	5.48	4.92	5.00	4.00	3.25	3.48	2.70
17	2.85	3.45	5.90	5.00	4.05	6.50	5.25	4.78	3.80	3.20	3.60	2.70
18	2.85	10.50	5.08	4.98	3.90	6.68	5.02	4.45	3.72	3.12	3.42	2.65
19	2.80	5.90	4.85	5.10	3.95	6.30	4.65	4.90	3.68	3.20	3.22	2.70
20	2.85	4.90	4.55	5.05	3.98	5.72	4.50	4.50	3.48	3.20	3.15	2.65
21	2.90	4.55	4.60	4.90	4.00	5.40	4.42	4.32	3.40	3.35	3.10	2.70
22	3.05	4.38	4.70	4.80	4.30	5.18	4.30	5.42	3.28	3.50	3.30	2.75
23	3.00	4.18	6.20	4.78	4.85	4.98	4.25	4.92	3.45	3.38	3.40	2.80

Daily gage height, in feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1918-19												
24	3.00	3.95	6.30	7.60	5.15	4.68	4.12	5.65	4.08	3.20	3.45	3.05
25	3.15	3.80	5.82	6.80	5.00	4.55	4.08	8.20	4.82	3.12	3.40	3.10
26	3.15	2.92	6.08	6.10	6.55	4.60	4.00	8.75	4.95	3.15	3.20	3.20
27	3.10	2.85	5.65	5.70	6.20	4.65	3.08	6.85	4.52	2.98	3.10	3.25
28	3.20	3.58	5.15	5.35	5.80	6.45	3.35	6.10	4.30	3.00	3.05	3.02
29	3.28	3.48	4.72	5.15	....	5.72	3.62	5.40	4.08	3.00	2.95	3.00
30	3.30	3.62	4.55	5.08	....	4.95	3.92	5.32	3.88	2.95	3.00	2.95
31	3.45	....	5.30	4.75	....	5.00	....	4.95	....	2.90	2.85	....
1919-20												
1	3.00	13.00	7.58	4.65	5.45	5.25	5.95	5.65	4.95	2.95	3.50	3.72
2	3.00	14.55	6.60	4.62	5.20	5.10	9.58	5.65	6.00	2.90	3.45	3.62
3	2.95	9.20	6.08	4.80	5.08	5.20	8.10	5.55	5.30	2.75	3.50	3.50
4	3.00	7.38	5.60	4.48	5.15	6.60	8.65	5.38	8.02	5.35	3.60	3.40
5	3.05	6.10	5.25	4.12	6.85	9.58	10.30	4.98	10.10	4.85	4.45	3.35
6	3.10	5.50	6.80	4.15	6.78	7.70	7.90	4.60	11.95	4.72	3.80	3.10
7	3.10	5.10	16.70	4.25	6.15	6.25	7.75	5.55	7.00	4.65	4.45	2.90
8	3.05	4.90	11.50	8.85	6.30	5.58	7.25	12.65	5.70	4.40	4.85	2.92
9	3.10	4.70	11.85	25.50	5.60	5.52	6.45	8.65	5.32	4.20	5.50	3.80
10	3.05	4.58	13.25	16.25	5.72	5.32	6.10	7.05	4.98	3.95	5.32	4.10
11	3.10	4.52	9.75	9.60	5.75	5.55	5.58	5.92	4.55	3.80	5.02	3.65
12	3.40	4.68	7.50	7.48	5.55	6.12	5.40	5.48	4.20	3.65	4.82	4.20
13	4.00	4.88	10.20	6.80	5.50	6.88	5.70	7.68	4.15	3.60	5.70	4.32
14	5.15	4.55	14.35	6.35	5.25	6.55	5.62	7.95	4.20	4.50	5.48	4.35
15	4.72	4.35	9.50	6.00	5.10	6.12	5.22	6.08	4.05	5.35	5.85	4.30
16	9.00	4.25	7.70	5.62	4.90	6.45	4.92	5.65	3.95	4.90	7.18	4.18
17	8.32	4.12	6.52	5.62	4.90	9.80	4.82	5.22	3.85	4.68	6.85	4.00
18	6.20	4.08	6.35	5.45	4.98	7.85	4.92	5.68	3.70	4.48	6.50	3.85
19	5.10	3.90	6.10	5.25	5.12	16.10	4.60	6.15	3.65	5.05	5.95	3.78
20	4.52	3.85	6.05	5.10	5.32	12.45	5.05	6.70	3.55	5.35	5.65	3.65
21	4.30	3.78	5.68	8.38	5.38	9.80	13.55	5.68	3.60	4.70	5.62	3.52
22	4.30	3.62	5.42	15.10	12.70	7.02	8.85	5.38	3.58	4.25	5.52	3.32
23	4.05	3.52	5.28	15.20	8.95	6.35	7.70	5.05	3.45	4.10	5.50	3.15
24	4.08	3.35	5.05	13.65	7.52	5.68	6.02	4.88	3.60	3.88	5.15	3.18
25	4.08	3.32	5.02	10.90	6.65	5.55	5.62	4.85	3.45	3.65	4.70	3.18
26	4.28	16.00	4.88	8.00	6.18	5.38	6.15	4.68	3.48	3.60	4.42	2.95
27	4.18	14.85	4.65	7.00	5.70	4.58	7.80	4.62	3.55	3.55	4.12	2.90
28	4.02	9.32	4.70	6.62	5.40	4.32	6.75	4.45	3.48	3.45	4.00	2.80
29	4.00	7.50	4.68	6.22	5.32	4.12	6.20	4.32	3.35	3.50	3.92	2.80
30	3.75	8.90	4.82	5.85	....	3.82	5.82	4.15	3.05	3.45	3.88	2.70
31	3.65	....	4.72	5.62	....	3.65	....	4.35	....	3.45	3.85	....

Daily discharge, in second feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.

Day	July	Aug.	Sept.	Day	July	Aug.	Sept.	Day	July	Aug.	Sept.
1910				1910				1910			
1	....	436	1,730	11	519	84	342	21	420	298	1,630
2	132	270	4,050	12	452	60	284	22	312	2,800	978
3	115	195	2,300	13	420	50	312	23	270	627	744
4	724	151	2,020	14	1,240	50	219	24	219	436	808
5	519	151	4,770	15	1,030	50	162	25	172	257	1,060
6	2,180	115	3,700	16	2,760	48	129	26	142	485	4,350
7	1,600	115	2,140	17	4,880	48	107	27	132	436	1,570
8	2,760	115	808	18	1,820	50	99	28	184	1,030	1,000
9	1,190	84	608	19	786	48	2,580	29	452	590	724
10	665	84	420	20	536	99	5,240	30	902	468	590
								31	1,030	388	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1910-11												
1	502	99	808	1,030	2,720	436	219	11,800	92	50	....	....
2	388	115	665	2,940	1,480	404	195	3,650	92	41	....	....
3	257	99	519	2,020	1,220	357	232	1,840	84	33	....	....
4	177	92	436	1,480	8,040	342	2,500	1,540	66	26	....	....
5	151	84	420	1,360	4,100	327	1,660	808	55	26	....	....
6	195	76	1,840	1,240	3,220	342	1,030	627	115	26	....	....
7	536	68	1,570	1,080	2,460	388	1,270	519	124	26	....	....
8	2,540	60	1,000	684	1,760	536	2,220	404	92	23	....	....
9	1,110	66	704	704	1,880	572	1,480	327	71	20	....	....
10	684	71	....	665	1,390	519	1,110	284	66	41	....	....
11	519	60	....	646	1,220	452	1,030	244	60	50	....	....
12	436	71	....	572	1,000	404	1,190	219	41	78	....	....
13	388	71	....	536	830	357	2,500	207	33	244	....	....
14	342	55	....	519	704	298	2,140	184	30	172	....	....
15	312	41	....	519	646	298	4,250	162	26	327	....	....
16	298	41	....	485	519	284	2,340	142	26	195	....	....
17	232	50	....	452	420	270	1,110	132	26	....	....	....
18	162	55	....	404	372	270	808	124	26	....	....	....
19	151	55	....	404	627	257	765	115	30	....	....	....
20	124	50	....	372	6,380	270	646	115	342	....	....	....
21	115	26	....	357	4,200	244	608	107	298	....	....	....
22	132	26	....	2,300	2,140	232	572	244	132	....	....	....
23	162	37	....	2,340	1,630	232	536	298	66	....	....	....
24	207	33	....	1,240	1,000	207	485	151	55	....	....	....
25	172	37	....	1,060	786	195	420	142	50	....	....	....
26	142	37	....	1,110	704	184	342	124	50	....	....	....
27	132	78	....	1,390	590	219	298	107	50	....	....	....
28	115	2,760	519	1,880	536	219	312	92	132	....	....	....
29	99	2,900	684	2,020	....	207	388	84	132	....	....	....
30	115	1,000	6,380	5,190	....	219	554	124	78	....	....	....
31	107	....	3,600	2,900	....	219	....	107	....	....	....	....

NOTE.—Daily discharge determined by means of a discharge rating curve fairly well defined between 50 and 6,550 second-feet (gage heights 0.3 and 12.7 feet). Discharge interpolated Nov. 4 to 7. Discharge Dec. 10 to 27 estimated, because of ice, from climatologic records; mean discharge 314 second-feet, estimated values varying from 150 to 600 second-feet.

Daily discharge, in second feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1911-12												
1	55	60	372	3,900	1,060	1,270	878	1,700	92	219	60	99
2	60	50	327	2,580	978	978	9,770	952	87	132	50	84
3	55	50	219	1,950	978	765	6,440	765	83	99	50	60
4	71	50	184	1,600	854	665	2,850	536	79	485	50	132
5	132	55	172	1,330	646	646	2,340	590	75	627	33	115
6	84	536	162	1,240	502	665	1,600	1,240	70	452	26	84
7	78	4,560	124	1,080	420	724	1,000	2,100	65	590	60	115
8	71	1,220	115	830	327	4,400	724	2,020	60	590	50	99
9	60	608	99	684	298	6,000	572	1,390	55	388	99	99
10	78	536	99	646	244	3,700	485	1,030	50	195	590	84
11	78	452	115	536	232	2,260	420	744	50	2,500	420	60
12	71	3,800	284	485	244	4,510	388	8,860	50	786	327	50
13	436	1,110	3,410	388	232	4,510	388	3,120	50	590	172	41
14	388	952	5,350	357	219	5,560	608	1,700	50	452	115	26
15	436	684	10,200	327	195	12,100	554	1,160	50	298	71	26
16	436	627	7,870	327	172	5,780	502	830	50	554	50	20
17	452	608	4,560	270	152	2,340	536	536	50	452	50	20
18	786	3,220	1,730	232	152	1,300	665	372	50	1,950	41	20
19	608	2,540	1,140	13,400	151	1,160	572	284	60	1,080	115	20
20	468	1,190	1,080	5,140	270	1,000	468	207	78	830	298	26
21	388	978	1,270	1,730	6,660	808	404	151	92	357	357	20
22	342	830	1,300	854	5,140	765	468	124	572	298	357	26
23	270	704	1,360	1,160	2,940	1,140	436	99	151	704	357	26
24	184	608	1,700	1,000	2,260	6,660	372	99	142	420	357	420
25	172	952	2,980	744	1,630	5,780	327	84	124	298	244	298
26	124	420	2,580	608	5,560	3,410	327	66	99	219	172	151
27	115	388	17,900	590	4,720	2,420	327	60	78	132	99	84
28	107	342	4,980	646	3,120	1,330	1,840	60	71	99	270	60
29	99	327	2,140	808	2,020	1,190	4,300	115	132	71	270	60
30	84	436	1,950	1,060	....	5,780	4,300	115	207	60	132	50
31	66	....	8,800	1,190	....	1,910	....	115	....	60	115	....
1912-13												
1	41	15	50	2,500	1,150	1,800	780	331	691	28	2.5	1.5
2	41	20	60	2,180	1,150	1,340	649	280	608	28	2.5	1.5
3	41	20	195	1,800	649	925	455	280	1,090	116	2.5	1.5
4	41	26	270	1,880	1,150	421	331	280	691	85	10	1.5
5	33	50	420	1,880	1,800	421	359	256	529	50	10	1.5
6	33	60	6,000	5,350	2,590	389	331	233	421	35	2.5	1.5
7	26	84	2,670	23,600	1,800	421	331	190	305	28	2.5	1.5
8	26	84	1,240	27,400	1,150	455	305	151	233	28	2.5	1.5
9	26	115	704	18,800	1,150	421	305	116	151	28	2.5	1.5
10	26	327	590	11,900	649	389	421	116	116	28	2.5	1.5
11	26	298	654	6,750	1,800	359	455	85	100	21	2.5	1.5
12	26	270	554	23,600	1,150	305	455	85	100	21	2.5	1.5
13	26	244	485	14,500	649	529	389	85	72	15	2.5	1.5
14	26	219	485	6,750	649	7,230	359	85	50	10	2.5	1.5
15	20	172	452	3,500	389	3,700	280	72	42	2.5	2.5	1.5
16	20	115	452	1,800	389	1,600	256	72	28	2.5	2.5	1.5
17	20	115	420	1,800	359	649	211	72	28	2.5	2.5	1.5
18	20	115	420	5,600	359	568	190	60	28	2.5	2.5	1.5
19	20	115	420	3,500	359	529	151	60	28	2.5	2.5	1.5
20	20	115	420	3,500	359	455	116	85	28	2.5	6	1.5
21	20	99	388	5,600	359	421	100	211	21	2.5	50	1.5
22	20	84	388	4,500	359	1,030	100	1,600	28	2.5	50	1.5
23	20	84	388	3,500	331	975	100	1,340	28	2.5	190	1.5
24	20	71	388	11,900	331	875	85	1,940	1,800	2.5	190	1.5

Daily discharge, in second feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1912-13												
25	20	60	357	6,750	491	925	100	1,030	568	2.5	133	1.5
26	20	60	357	4,500	780	21,600	170	925	331	2.5	100	1.5
27	15	50	357	3,500	1,800	25,700	491	875	116	35	50	1.5
28	15	50	554	2,590	2,420	10,100	975	875	72	21	28	1.5
29	15	50	704	2,590	......	3,310	529	875	42	10	10	1.5
30	15	50	704	1,800	......	2,170	529	825	35	10	2.5	1.5
31	15	......	2,940	1,150	......	1,210	......	825	......	2.5	1.5	......
1913-14												
1	2.5	28	389	......	975	529	1,030	305	35	2.5	28	72
2	2.5	28	491	......	925	421	2,250	256	50	2.5	72	72
3	2.5	28	568	......	875	359	1,460	190	50	2.5	85	72
4	2.5	28	455	......	875	491	1,090	170	85	2.5	85	50
5	2.5	28	421	......	825	455	875	10,900	170	2.5	85	72
6	2.5	28	331	......	780	421	780	7,740	256	2.5	85	72
7	2.5	60	780	......	1,150	389	608	3,040	735	2.5	85	649
8	2.5	60	649	......	1,870	389	735	1,660	211	2.5	85	4,100
9	2.5	85	491	......	1,460	359	825	735	170	2.5	85	1,030
10	2.5	60	389	......	735	305	691	608	72	2.5	100	1,030
11	2.5	42	359	......	608	568	568	568	42	2.5	100	2,950
12	2.5	42	280	......	491	6,750	455	455	28	2.5	280	780
13	2.5	35	280	......	735	3,400	389	389	10	2.5	305	780
14	2.5	35	233	......	3,800	1,870	305	305	10	2.5	825	491
15	2.5	35	190	......	1,940	1,460	280	256	10	211	256	421
16	2.5	72	280	......	1,730	1,270	780	190	10	305	100	305
17	2.5	100	233	......	1,030	1,090	649	133	10	151	85	305
18	2.5	211	211	......	3,310	875	608	133	10	100	60	256
19	72	491	190	......	9,170	780	529	116	10	72	50	211
20	72	211	190	......	5,380	649	491	100	10	28	35	133
21	100	211	170	......	2,500	568	1,340	100	10	10	35	100
22	151	256	256	......	1,530	455	1,090	85	10	10	35	116
23	85	608	280	......	1,030	389	875	50	10	10	35	72
24	60	421	1,800	......	925	421	691	28	10	10	649	60
25	50	455	1,870	......	780	491	568	85	10	10	568	60
26	50	455	1,730	......	649	280	568	85	10	10	421	60
27	42	421	1,600	......	608	389	491	85	10	10	331	28
28	28	421	1,400	......	608	389	455	85	10	10	256	28
29	28	389	1,270	......	......	359	389	72	10	28	190	24
30	28	389	1,090	......	......	491	331	170	10	28	100	21
31	28	......	925	......	......	1,600	......	151	......	28	100	......
1914-15												
1	21	151	190	......	11,600	116	292	41	374	825	52	116
2	21	100	211	......	5,600	100	292	36	491	2,590	292	190
3	21	100	211	......	2,090	100	268	42	359	1,210	691	88
4	21	100	2,090	......	1,400	85	268	38	305	1,340	438	75
5	21	100	3,130	......	1,400	170	256	39	233	2,340	233	233
6	21	100	2,580	......	3,130	2,500	244	92	92	1,730	180	1,030
7	21	85	2,020	......	1,730	1,030	233	85	78	925	100	1,460
8	21	85	1,660	......	1,150	568	222	72	151	5,820	72	735
9	825	85	1,530	......	780	455	222	124	108	2,500	70	568
10	3,900	85	1,400	......	529	305	222	100	160	925	142	405
11	1,460	85	1,030	1,600	405	268	222	92	100	1,030	1,600	331
12	1,030	85	649	6,870	359	222	421	88	82	925	2,420	280
13	649	85	568	4,100	305	190	389	85	62	6,150	735	244
14	11,100	50	421	2,170	268	200	331	75	55	1,870	256	200
15	12,300	42	331	1,030	256	151	305	58	92	825	170	151
16	7,480	42	280	735	608	389	268	52	1,730	529	735	100
17	6,880	42	491	925	292	233	233	52	735	318	491	67

Daily discharge, in second feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1914-15												
18	6,270	42	529	1,460	244	305	211	58	331	268	825	46
19	4,200	42	529	2,950	211	455	211	55	256	200	455	34
20	2,950	42	6,270	1,800	170	345	211	50	1,150	233	359	27
21	1,030	42	4,300	1,270	170	455	151	41	1,090	200	780	35
22	608	42	2,420	1,210	151	421	133	62	1,270	160	925	36
23	491	42	1,400	4,400	133	455	133	244	568	124	825	34
24	359	28	1,340	2,250	160	568	133	455	405	78	825	35
25	305	28	4,000	1,400	170	825	133	825	305	55	925	34
26	305	28	2,950	1,090	179	608	124	359	151	45	491	34
27	256	28	1,400	780	142	529	78	3,900	116	36	200	31
28	211	28	......	491	133	455	58	2,860	124	41	160	28
29	190	28	......	649	......	421	52	1,400	108	41	151	27
30	100	190	......	421	......	359	44	925	133	34	160	20
31	151	......	......	691	......	345	......	825	......	41	133	......
1915-16												
1	4,940	46	233	......	7,350	491	649	116	455	29	55	10
2	5,380	58	211	......	2,590	1,340	491	100	233	27	44	35
3	1,270	70	200	......	1,530	1,460	491	94	170	27	41	21
4	649	60	190	......	1,030	925	405	108	108	20	44	35
5	4,940	58	180	......	925	825	345	1,150	78	18	44	28
6	2,860	55	170	......	780	735	268	389	72	14	36	20
7	975	52	151	......	1,400	1,800	222	256	70	11	29	16
8	491	50	133	......	925	2,020	925	190	331	15	35	14
9	305	52	124	......	780	1,030	1,340	142	211	15	180	10
10	200	46	116	......	1,340	735	925	100	142	10	190	10
11	233	47	124	......	1,210	649	691	88	116	10	85	10
12	190	49	691	5,600	925	568	568	70	78	10	52	9.2
13	170	56	925	10,900	2,090	438	455	61	62	11	48	8
14	151	133	608	3,900	2,420	374	421	56	52	35	44	9.2
15	124	4,100	491	1,660	1,530	455	280	55	52	28	48	6.8
16	97	3,900	7,230	1,150	1,150	1,030	280	50	100	22	46	6
17	82	1,150	16,800	925	1,090	925	222	48	180	20	50	6
18	92	735	14,600	649	925	825	222	44	318	14	100	5.3
19	151	5,050	5,600	491	780	735	200	38	455	568	72	3.2
20	1,530	3,500	2,340	568	529	649	190	35	568	1,400	55	2.5
21	568	1,460	1,210	455	491	491	170	35	280	735	38	2.5
22	305	925	925	1,800	405	491	151	38	190	975	32	2.4
23	244	649	825	2,950	374	405	142	36	133	491	28	2.1
24	200	491	649	1,660	2,420	292	124	32	100	256	21	2
25	170	389	825	1,030	2,090	268	116	124	82	190	21	1.7
26	151	318	1,940	780	1,400	292	116	116	60	233	21	2.5
27	133	280	2,590	649	925	1,400	116	60	52	292	21	2.5
28	116	280	1,940	568	691	2,340	133	48	48	180	18	6.4
29	88	280	6,150	2,420	568	1,600	170	44	38	108	15	9.2
30	67	256	6,270	2,590	......	1,630	142	52	34	108	12	19
31	54	......	2,420	1,660	......	1,150	......	1,530	......	78	10	......

NOTE.—Gage washed out Jan. 10, 1913; gage heights were estimated by the observer Jan. 10 to Feb. 14, inclusive. Gage not read during January, 1914. Sept. 29, Oct. 17, and Dec. 6, 1914, discharge interpolated. Discharge estimated from record of flow of Licking River at Falmouth, Ky., Dec. 28-31, 1914, 1,300 second-feet; Jan. 1-10, 1915, at 1,170 second feet, and Jan. 1-11, 1916, at 1,500 second-feet. These estimates are subject to considerable error, but the effect on the monthly and yearly means will not be great.

Daily discharge, in second feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
1	16	22	35	455	925	6,510	345	222	60	16	44	35
2	34	21	32	455	1,270	3,040	4,830	190	82	14	38	34
3	12	20	31	2,090	875	6,990	2,860	142	1,150	12	36	50
4	11	18	31	11,200	649	4,400	1,270	116	389	9.6	35	108
5	10	18	34	12,400	438	2,770	925	97	244	9.2	32	92
6	9.2	16	32	6,270	318	1,940	1,870	88	160	8.0	29	75
7	8.0	15	32	2,420	345	2,090	1,340	94	133	8.0	25	58
8	6.4	15	36	1,400	292	6,510	875	88	256	8.0	24	48
9	10	15	42	925	268	3,310	825	77	180	6.8	21	41
10	9.2	12	42	735	233	1,800	691	72	691	4.6	19	34
11	8.0	12	39	529	233	1,210	529	72	491	2.5	16	32
12	7.6	11	34	389	211	1,270	405	71	331	2.5	13	27
13	6.8	11	36	331	142	2,170	421	66	222	2.5	11	20
14	6.0	10	39	280	142	1,660	438	61	160	2.5	10	18
15	6.0	9.2	38	280	190	1,530	405	56	124	3.2	9.2	16
16	7.6	9.2	35	359	1,340	925	318	51	100	3.4	10	13
17	10	9.2	32	374	975	3,220	268	49	86	3.6	11	12
18	15	9.2	35	359	735	3,700	233	45	70	3.9	10	10
19	46	10	32	345	825	1,400	211	41	58	4.2	14	7.6
20	256	10	34	405	3,900	925	190	38	50	16	15	6.0
21	568	12	36	1,400	2,770	780	160	35	44	29	16	7.6
22	200	13	100	22,300	1,270	925	133	34	38	88	21	6.0
23	73	12	649	7,870	975	1,030	133	34	35	82	133	5.3
24	85	17	491	1,870	4,300	10,300	116	31	29	62	649	5.3
25	62	29	438	1,400	2,250	2,950	116	29	29	48	875	5.3
26	48	31	491	1,030	1,270	1,400	97	25	24	48	222	3.2
27	41	34	691	735	825	925	85	24	20	280	108	4.2
28	36	54	4,720	649	7,230	1,030	78	32	18	438	85	11
29	32	48	3,130	925	...	735	100	82	19	222	66	22
30	29	41	1,340	825	...	529	280	66	16	70	44	108
31	25	...	649	649	...	405	...	55	...	50	41	...
1917-18												
1	85	318	49	374	1,150	374	100	190	36	92	44	45
2	54	190	66	345	735	331	116	133	25	75	38	45
3	47	142	75	305	608	244	133	116	23	40	29	26
4	27	108	66	331	875	280	1,530	100	17	22	14	26
5	17	88	54	331	438	529	875	40	16	14	12	36
6	11	75	49	359	438	875	389	49	11	74	74	36
7	90	65	47	3,600	875	825	305	62	22	45	82	36
8	14	58	49	1,400	2,170	389	233	54	22	74	14	36
9	94	53	44	691	3,310	374	455	44	14	23	14	36
10	94	47	40	421	2,590	318	359	33	11	40	94	36
11	11	44	36	389	1,600	268	211	116	11	22	60	36
12	94	40	31	455	1,090	292	211	151	11	18	45	36
13	74	40	38	1,090	1,030	331	190	305	94	11	41	36
14	78	36	42	1,150	735	331	151	2,590	82	60	30	36
15	12	36	38	1,940	691	305	142	1,150	68	36	36	36
16	14	36	31	4,500	735	244	116	331	51	26	36	36
17	16	36	36	3,220	491	211	124	280	30	36	74	36
18	23	33	42	1,660	389	180	100	160	15	15	45	36
19	318	31	47	875	359	170	97	160	14	15	51	36
20	405	28	78	649	3,220	151	78	222	15	20	41	36
21	256	27	133	825	3,800	151	649	244	26	20	30	36
22	180	25	151	730	1,270	151	1,030	389	26	45	24	36
23	116	23	389	635	780	151	405	280	26	74	15	36
24	82	20	389	545	649	151	280	190	26	75	20	36
25	62	17	491	455	491	190	268	133	45	491	20	36
26	51	16	875	608	529	389	233	108	74	359	17	36
27	47	16	608	5,490	608	318	405	78	74	305	24	36

Daily discharge, in second feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
28	44	20	491	12,700	455	211	374	66	14	66	36	36
29	42	27	345	10,300	...	190	268	54	25	70	26	36
30	491	44	318	2,420	...	151	233	47	14	62	51	36
31	649	...	374	1,800	...	116	...	40	...	49	82	...
1918-19												
1	3.6	60	54	16,800	222	735	211	155	268	60	9.4	2.6
2	3.6	124	54	16,800	190	825	180	735	200	49	18	2.6
3	3.6	100	49	4,940	160	568	170	389	160	38	7.4	2.0
4	3.6	66	42	1,530	151	491	133	256	151	27	6.0	2.6
5	3.6	44	40	925	151	421	133	256	160	23	42	2.0
6	3.6	36	40	649	133	2,090	133	151	133	23	6.2	2.6
7	3.6	29	31	455	116	1,530	116	100	108	22	222	2.6
8	3.6	20	31	455	108	925	133	116	82	8.2	151	2.0
9	3.6	20	29	568	108	3,900	116	2,950	280	22	97	2.0
10	3.6	17	33	455	100	2,340	222	5,600	421	11	70	1.2
11	3.6	16	49	374	97	1,340	2,090	1,940	233	11	44	1.5
12	3.6	11	151	280	85	1,150	1,870	735	124	14	33	1.5
13	3.6	9.4	292	256	82	359	691	780	389	22	25	1.2
14	3.6	7.4	421	233	85	529	455	491	233	17	22	1.5
15	3.6	6.0	2,420	268	82	455	345	389	133	20	20	1.2
16	3.6	2.6	875	331	124	455	280	305	100	20	38	1.5
17	3.6	3.6	608	305	108	875	374	256	72	17	49	1.5
18	3.6	4,000	331	305	85	975	305	180	62	12	33	1.2
19	2.6	608	268	331	92	780	222	280	58	17	18	1.5
20	3.6	280	200	318	97	529	190	190	38	17	14	1.2
21	4.5	200	211	280	100	421	170	151	31	27	11	1.5
22	9.4	170	233	256	151	359	151	421	22	40	23	2.0
23	7.4	133	735	256	268	305	142	280	36	29	31	2.6
24	7.4	92	780	1,530	345	233	116	491	116	17	36	9.4
25	14	72	568	1,030	305	200	116	1,940	256	12	31	11
26	14	5.1	691	691	925	211	100	2,420	292	14	17	17
27	11	3.6	491	529	735	222	11	1,030	190	6.8	11	20
28	17	4.7	345	405	568	825	27	691	151	7.4	9.4	8.2
29	22	38	233	345	...	529	51	421	116	7.4	6.0	7.4
30	23	51	200	331	...	292	88	389	82	6.0	7.4	6.0
31	36	...	389	245	...	305	...	292	...	4.5	3.6	...
1919-20												
1	7.4	6,750	1,530	222	438	374	649	491	292	6.0	40	62
2	7.4	8,780	925	211	359	331	3,130	491	649	4.5	36	51
3	6.0	2,770	691	256	331	359	1,870	491	389	2.0	40	40
4	7.4	1,400	491	190	345	925	2,250	421	1,800	405	49	31
5	9.4	691	374	116	1,030	3,130	3,800	305	3,600	268	180	27
6	11	455	1,030	124	1,030	1,600	1,730	211	5,600	233	72	11
7	11	331	11,500	142	735	735	1,660	491	1,150	222	180	4.5
8	9.4	280	5,050	2,420	780	491	1,270	6,270	529	170	268	5.1
9	11	233	5,380	23,000	491	455	825	2,250	389	133	455	72
10	9.4	211	6,990	10,900	529	389	691	1,150	305	92	389	116
11	11	190	3,310	3,130	568	491	491	608	200	72	305	54
12	31	233	1,460	1,460	491	691	421	455	133	54	256	133
13	100	280	3,700	1,030	455	1,090	529	1,600	124	49	529	151
14	345	200	8,520	825	374	925	491	1,800	133	190	455	160
15	233	160	3,040	649	331	691	359	691	108	405	568	151
16	2,590	142	1,600	491	280	825	280	491	92	280	1,270	133
17	2,020	116	875	491	280	3,310	256	359	78	233	1,030	100
18	735	116	825	438	305	1,660	280	529	60	190	875	78
19	331	85	691	374	331	10,700	211	735	54	318	649	70
20	190	78	649	331	389	6,040	318	975	44	405	491	54

Daily discharge, in second feet, of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1919-20												
21	151	70	529	2,090	421	3,310	7,480	529	49	233	491	42
22	151	51	421	9,430	6,390	1,150	2,420	421	47	142	455	25
23	108	42	389	9,560	2,590	825	1,600	318	36	116	455	14
24	116	27	318	7,480	1,460	529	649	280	49	82	345	16
25	116	25	305	4,400	925	491	491	268	36	54	233	16
26	151	10,600	280	1,800	735	421	735	233	38	49	170	6.0
27	133	9,040	222	1,150	529	211	1,660	211	44	44	116	4.5
28	100	2,860	233	925	421	151	1,030	180	38	36	100	2.6
29	100	1,460	233	735	389	116	735	151	27	40	88	2.6
30	66	2,500	256	568	....	75	568	124	94	36	82	1.5
31	54	....	233	491	....	54	....	160	....	36	78	....

Monthly discharge of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.

(Drainage area, 395 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1910					
July 2-31	4,880	115	952	2.41	2.69
August	2,800	48	326	.826	.95
September	5,240	99	1,520	3.85	4.30
1910-11					
October	2,540	99	355	0.899	1.04
November	2,900	26	277	.702	.78
December	6,380	....	800	2.02	2.33
January	5,190	357	1,290	3.27	3.77
February	8,040	372	1,880	4.76	4.96
March	572	184	315	.798	.92
April	4,250	195	1,110	2.81	3.14
May	11,800	84	807	2.04	2.35
June	342	26	84.7	.214	.24
July 1-16	327	20	86.1	.218	.13
1911-12					
October	786	55	221	0.560	0.65
November	4,560	50	963	2.44	2.72
December	17,900	99	2,730	6.92	7.98
January	13,400	232	1,540	3.90	4.50
February	6,660	151	1,460	3.70	3.85
March	12,100	646	2,950	7.47	8.61
April	9,770	327	1,500	3.80	4.24
May	8,860	60	1,010	2.56	2.95
June	572	50	97.4	.247	.28
July	2,500	60	516	1.31	1.51
August	590	26	176	.446	.51
September	420	20	82.5	.209	.23
The year	17,900	20	1,100	2.79	38.03

Monthly discharge of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1912-13					
October	41	15	24.3	0.062	0.07
November	327	15	108	.273	.30
December	6,000	50	787	1.99	2.29
January	27,400	1,150	7,000	17.72	20.43
February	25,900	331	949	2.40	2.50
March	25,700	305	2,940	7.44	8.58
April	975	85	344	.871	.97
May	1,940	60	462	1.17	1.35
June	1,800	21	279	.706	.79
July	116	2.5	20.3	.051	.06
August	190	1.5	28.2	.071	.08
September	1.5	1.5	1.5	.038	.004
The year	27,400	1.5	1,090	2.76	37.42
1913-14					
October	151	2.5	27.1	.069	.08
November	608	28	191	.484	.54
December	1,870	170	639	1.62	1.87
January	....	....	....	....	....
February	9,170	491	1,690	4.28	4.46
March	6,750	280	925	2.34	2.70
April	2,250	280	740	1.87	2.09
May	10,900	28	943	2.39	2.76
June	735	10	69.5	.176	.20
July	305	2.5	34.4	.087	.10
August	825	28	181	.458	.53
September	4,100	21	481	1.22	1.36
The period	10,900	2.5	493	1.25	16.69
1914-15					
October	12,300	21	2,040	5.16	5.95
November	190	28	67.7	.171	.19
December	6,270	190	1,580	4.00	4.61
January	6,870	421	1,610	4.08	4.70
February	11,600	133	1,210	3.06	3.19
March	2,500	85	440	1.11	1.28
April	421	44	212	.537	.60
May	3,900	36	427	1.08	1.24
June	1,730	55	374	.947	1.06
July	6,150	34	1,080	2.73	3.15
August	2,420	52	513	1.30	1.50
September	1,460	20	223	.565	.63
The year	12,300	20	818	2.07	28.10
1915-16					
October	5,380	54	869	2.20	2.54
November	5,050	46	820	2.08	2.32
December	16,800	116	2,480	6.28	7.24
January	10,900	....	1,900	4.81	5.54
February	7,350	374	1,400	3.54	3.82
March	2,340	268	896	2.27	2.62
April	1,340	116	366	.927	1.03
May	1,530	32	171	.433	.50
June	568	34	162	.410	.46
July	1,400	10	192	.486	.56
August	190	10	49.5	.125	.14
September	35	1.7	10.5	.027	.03
The year	16,800	1.7	778	1.97	26.80

Monthly discharge of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1916-17					
October	568	6	54.6	0.138	0.16
November	54	9.2	18.8	.048	.05
December	4,720	31	433	1.10	1.27
January	22,300	280	2,630	6.66	7.68
February	7,230	142	1,260	3.19	3.32
March	10,300	405	2,530	6.41	7.39
April	4,830	78	685	1.73	1.93
May	222	24	70.4	.178	.20
June	1,150	16	177	.448	.50
July	438	2.5	50.2	.127	.15
August	875	9.2	86.5	.219	.25
September	108	3.2	30.5	.077	.09
The year	22,300	2.5	669	1.69	22.99
1917-18					
October	649	74	101	.256	.30
November	318	16	58.0	.147	.16
December	875	31	178	.451	.52
January	12,700	305	1,950	4.94	5.70
February	3,800	359	1,150	2.91	3.03
March	875	116	296	.749	.86
April	1,530	78	335	.848	.95
May	2,590	33	255	.646	.74
June	36	1.4	11.3	.029	.03
July	491	1.5	60.9	.154	.18
August	44	1.5	8.72	.022	.03
September	45	2.6	3.59	.0091	.01
The year	12,700	1.4	364	0.922	12.51
1918-19					
October	36	26	7.64	.019	.02
November	4,000	2.6	209	.529	.59
December	2,420	29	351	.889	1.02
January	16,800	233	1,690	4.28	4.93
February	925	82	206	.522	.54
March	3,900	200	812	2.06	2.38
April	2,090	11	311	.787	.88
May	5,600	100	799	2.02	2.33
June	421	22	157	.397	.44
July	60	4.5	20.0	.051	.06
August	222	3.6	37.7	.095	.11
September	20	1.2	4.04	.010	.01
The year	16,800	1.2	388	.982	13.31
1919-20					
October	2,590	6.0	256	.648	.75
November	10,600	25	1,670	4.23	4.72
December	11,500	222	2,000	5.06	5.83
January	23,000	116	2,760	6.99	8.06
February	6,390	280	818	2.07	2.23
March	10,700	54	1,370	3.47	4.00

Monthly discharge of Dix River near Burgin, Ky., for the years ending September 30, 1910-1920.—Continued.

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1919-20					
April	7,480	211	1,300	3.29	3.67
May	6,270	124	764	1.93	2.22
June	5,600	9.4	537	1.36	1.52
July	405	2.0	148	.375	.43
August	1,270	36	347	.879	1.01
September	160	1.5	54.5	.138	.15
The year	23,000	1.5	1,000	2.53	34.59

ELKHORN CREEK AT FORKS OF ELKHORN, KY.

LOCATION.—At footbridge at Forks of Elkhorn, Franklin County, three-fourths mile below forks of stream and 5 miles northeast of Frankfort.

DRAINAGE AREA.—415 square miles (measured by United States Engineer Corps).

RECORDS AVAILABLE.—April 26, 1915, to September 30, 1920.

GAGE.—Vertical staff in two sections on left bank; section reading 0 to 5 feet attached to elm tree 40 feet below bridge, other section attached to sycamore tree about 20 feet below bridge; read by R. S. Estes and L. I. McDaniel.

DISCHARGE MEASUREMENTS.—Made from footbridge.

CHANNEL AND CONTROL.—Bed of stream loose stone and bed rock; probably permanent. Control short distance below gage, composed of solid rock and boulders; permanent.

EXTREMES OF DISCHARGE.—1915-1920: Maximum mean daily stage recorded 13.45 feet November 2, 1919, (discharge 16,800 second-feet); minimum stage 0.20 feet for long periods during 1917, 1918, and 1919 (discharge 49 second-feet).

ICE.—Stage-discharge relation probably not affected by ice except during severe winters.

ACCURACY.—Stage-discharge relation probably permanent; not affected by ice during year. Rating curve well defined, 65 to 18,000 second-feet and fairly well defined at other stages. Gage read twice daily to tenths. Daily discharge ascertained

by applying mean gage readings to rating table. No discharge measurements have been made at this station since 1916 and records of discharge after 1917 may be considerably in error and should be used with caution.

COOPERATION.—Base data furnished by United State Engineer Corps.

Discharge measurements of Elkhorn Creek at Forks of Elkhorn, Ky., during the years ending September 30, 1915-1917.

Date	Made by—	Gage Height	Dis-charge	Date	Made by—	Gage Height	Dis-charge
		Ft.	Sec.-ft.			Ft.	Sec.-ft.
1915				1916			
May 24	R. S. Durrell	3.06	960	June 19	C. J. Thiebaud	8.05	6,000
27	R. S. Durrell	3.09	979	July 14	C. J. Thiebaud	1.40	200
June 11	Durrell and Thiebaud	2.40	498	1917 Jan. 3	C. J. Thiebaud	6.6	4,260
Oct. 21	C. J. Thiebaud	1.95	284	22	C. J. Thiebaud	11.75	13,500
Dec. 20	C. J. Thiebaud	5.87	3,500	22	C. J. Thiebaud	11.8	12,700
				Apr. 3	C. J. Thiebaud	5.92	3,630
1916				May 19	C. J. Thiebaud	0.55	78.2
June 19	C. J. Thiebaud	7.45	5,250	July 20	B. E. Jones	.96	140
19	C. J. Thiebaud	7.95	5,800	31	L. Scofield	.6	78.9

Daily gage height, in feet, of Elkhorn Creek at Forks of Elkhorn, Ky., for the years ending September 30, 1915-1920.

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1915						1915					
1	1.0	2.35	1.3	1.3	2.0	16	1.45	1.9	2.15	1.95	1.7
2	1.0	4.0	1.4	1.3	1.95	17	1.4	1.8	2.0	3.0	2.3
3	1.29	3.85	1.55	1.55	1.9	18	1.4	1.8	1.9	4.15	2.9
4	1.31	3.15	1.95	3.0	1.85	19	1.3	1.65	1.8	3.0	2.75
5	1.2	3.85	2.2	2.85	3.75	20	1.3	1.55	1.65	3.0	2.35
6	1.2	2.65	2.05	2.65	4.75	21	1.3	1.5	1.45	3.0	1.95
7	1.53	3.55	1.95	2.3	3.9	22	2.3	1.5	1.3	3.55	1.75
8	2.75	3.5	3.55	1.95	3.3	23	3.4	1.4	1.3	3.05	1.7
9	2.25	3.3	5.0	1.65	2.75	24	3.15	1.37	1.3	2.9	1.7
10	1.85	2.9	4.7	1.5	2.35	25	2.9	1.3	1.3	2.8	1.7
11	1.85	2.4	4.0	1.5	2.15	26	2.6	1.3	1.3	2.4	1.7
12	1.74	2.15	3.2	1.5	2.0	27	2.6	1.3	1.3	2.1	1.7
13	1.6	2.0	2.7	1.5	2.0	28	....	1.3	1.3	2.0	1.7
14	1.5	2.0	2.45	1.5	1.9	29	2.95	1.3	1.3	2.0	1.7
15	1.5	2.0	2.3	3.0	1.8	30	2.7	1.25	1.3	2.3	1.7
						31	2.45	....	1.3	2.15	....

Daily gage height, in feet, of Elkhorn Creek at Forks of Elkhorn, Ky., for the years ending September 30, 1915-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	4.75	1.5	2.0	4.5	6.9	2.65	2.75	1.4	1.0	1.25	1.0	0.8
2	5.1	1.5	2.0	4.45	5.75	2.5	2.55	1.4	1.0	1.1	1.0	.8
3	4.3	1.5	2.0	4.1	4.6	2.5	2.35	1.45	1.0	1.05	1.0	.8
4	3.3	1.5	2.0	3.7	3.85	2.35	2.15	1.8	1.0	.95	1.0	.8
5	2.8	1.5	2.0	3.65	3.4	2.2	1.95	1.65	1.0	.9	1.0	.8
6	2.45	1.5	2.0	3.9	3.15	2.1	1.75	1.5	1.8	.9	1.0	.8
7	2.25	1.5	2.0	3.35	2.95	4.05	1.6	1.5	2.55	.9	.9	.8
8	2.05	1.5	2.0	3.0	2.75	3.9	1.6	1.5	1.9	.9	.9	.8
9	2.0	1.5	2.0	3.0	2.55	3.35	1.75	1.45	1.45	.9	.8	.8
10	2.0	1.5	2.0	3.0	2.35	2.9	1.9	1.3	1.45	.9	.8	.8
11	1.9	1.5	2.0	4.8	2.3	2.55	1.7	1.3	1.6	.9	1.0	.8
12	1.8	1.5	2.05	8.2	2.4	2.35	1.5	1.3	2.0	.9	1.0	.8
13	1.7	1.5	2.15	9.7	6.25	2.25	1.5	1.25	1.7	.9	.9	.8
14	1.6	2.0	2.2	6.6	5.35	2.1	1.5	1.05	1.45	1.35	2.0	.8
15	1.5	3.7	2.2	5.05	4.4	3.8	1.5	.85	1.7	1.3	3.6	.8
16	1.5	4.0	3.6	4.35	4.05	3.0	1.5	.8	1.75	1.05	2.45	.8
17	1.5	3.3	11.6	3.55	4.0	3.0	1.5	.8	1.9	1.0	1.6	.8
18	1.5	3.05	11.85	3.0	3.9	2.9	1.5	.8	1.65	1.0	1.0	.8
19	1.55	5.5	7.95	2.65	3.45	2.75	1.5	.8	7.4	4.75	.9	.8
20	1.6	5.35	5.95	2.45	3.15	2.6	1.5	.8	6.35	2.8	.9	.8
21	1.5	4.25	4.75	2.25	2.8	2.5	1.5	.8	4.25	2.7	.8	.8
22	1.5	3.5	3.9	3.8	2.55	2.4	1.5	.8	3.3	2.35	1.35	.8
23	1.5	3.1	3.5	3.55	2.45	2.3	1.5	.8	2.7	2.15	1.0	.8
24	1.5	2.85	3.05	3.25	3.05	2.15	1.5	.8	2.45	1.45	1.0	.8
25	1.5	2.65	5.05	3.15	4.1	2.0	1.5	.8	2.2	1.2	.9	.8
26	1.5	2.45	4.2	2.95	3.9	2.2	1.5	.8	1.9	1.5	.9	.8
27	1.5	2.25	3.75	2.75	3.45	3.9	1.5	.8	1.8	1.2	.8	.8
28	1.5	2.2	4.05	2.55	2.95	3.9	1.4	.8	1.75	1.2	.8	.85
29	1.5	2.1	6.75	3.95	2.85	3.6	1.4	.8	1.55	1.05	.8	1.1
30	1.5	2.0	6.8	8.3	....	3.25	1.4	1.0	1.35	1.0	.8	.85
31	1.5	....	5.2	7.65	....	2.95	....	1.0	....	1.0	.8	....
1916-7												
1	0.80	0.80	0.80	2.70	2.60	2.60	2.50	1.20	2.20	0.40	0.60	0.30
2	.80	.80	.80	2.60	2.60	3.30	8.70	1.20	2.70	.40	.50	.20
3	.80	.80	.80	7.40	2.50	3.70	6.30	1.20	2.30	.40	.50	.20
4	.80	.80	.80	5.20	2.20	4.50	4.60	1.20	1.90	.40	.60	.20
5	.80	.80	3.60	6.20	2.00	4.50	5.00	1.20	1.80	.40	.40	.20
6	.80	.80	1.90	5.80	2.00	3.90	7.00	1.00	1.60	.40	.35	.20
7	.80	.80	1.60	5.00	2.00	3.70	5.40	1.00	2.30	.40	.30	.20
8	.80	.80	1.40	3.70	1.70	5.30	2.50	1.00	3.70	.40	.30	.65
9	.80	.80	1.40	2.90	1.30	7.10	3.80	1.00	9.60	.40	.30	.85
10	.80	.80	1.20	2.80	1.20	6.40	3.40	1.00	5.00	.40	.30	.60
11	.80	.80	1.20	2.50	1.20	6.50	2.80	1.00	3.60	.40	.30	.35
12	.80	.80	1.00	2.40	1.20	7.90	2.50	1.00	2.60	.40	.30	.30
13	.80	.80	1.00	2.40	1.20	6.90	2.10	1.00	2.20	.40	.25	.30
14	.80	.80	1.00	2.40	1.20	7.40	2.00	1.00	2.30	.40	.20	.30
15	.80	.80	1.00	2.40	1.20	5.50	1.80	1.00	1.90	.40	.20	.30
16	.80	.80	1.00	2.40	1.20	4.60	1.80	1.00	1.70	.40	.20	.20
17	.80	.80	1.00	2.40	1.20	4.00	1.80	1.00	1.30	.40	.20	.20
18	.80	.80	1.00	2.30	1.60	3.50	1.80	1.00	1.00	.40	.20	.20
19	1.20	.80	1.00	1.80	2.10	2.90	1.60	.75	1.00	.40	.20	.20
20	.95	.80	1.00	1.40	2.00	2.60	1.50	.50	1.00	.60	.20	.20
21	.90	.80	1.00	4.70	2.00	6.00	1.30	.50	1.00	.80	.20	.20
22	.80	.80	1.00	11.90	2.00	4.70	1.00	.55	1.00	.60	.20	.20
23	.80	.80	1.00	8.50	2.50	4.50	1.00	.80	1.00	.50	.20	.20
24	.80	.80	1.60	5.40	3.00	5.80	1.00	.60	.80	.40	.20	.20
25	.80	.80	2.20	4.40	2.50	4.80	1.00	.60	.80	1.70	.20	.20

NOTE.—May 28 no reading reported.

Daily gage height, in feet, of Elkhorn Creek at Forks of Elkhorn, Ky., for the years ending September 30, 1915-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
26	.80	.80	2.80	3.60	2.10	3.70	1.00	.60	.70	1.90	.20	.20
27	.80	.80	8.40	3.00	2.00	3.90	1.00	7.50	.60	1.30	.20	.20
28	.80	.80	6.80	2.90	2.10	3.20	1.00	7.50	.60	.90	.20	.20
29	.80	.80	5.40	2.80	....	2.70	1.00	4.50	.50	.60	.20	.20
30	.80	.80	4.00	2.80	....	2.30	1.20	2.80	.40	.40	.40	.20
31	.80	....	3.20	2.60	....	1.90	....	2.30	....	.50	.35	....
1917-18												
1	0.2	0.2	0.2	1.0	2.3	1.75	1.0	0.6	0.8	0.95	0.8	0.55
2	.2	.2	.2	1.0	2.0	1.55	1.0	.6	.8	.75	.6	.4
3	.2	.2	.2	1.0	2.0	1.5	1.2	.6	.8	.55	.55	.7
4	.2	.2	.2	1.0	2.0	1.5	1.1	.6	.8	.5	.4	.8
5	.2	.2	.2	1.1	2.0	1.5	1.0	.6	.8	.5	.4	.8
6	.2	.2	.2	2.1	2.0	1.5	1.0	.6	.8	.5	.4	.8
7	.2	.2	.2	2.3	3.75	1.6	1.0	.6	1.0	.5	.4	.6
8	.2	.2	.2	2.5	8.0	1.5	1.0	.6	1.0	.8	.3	.45
9	.2	.2	.2	1.8	9.45	1.45	1.0	.6	1.0	.7	.2	.4
10	.2	.2	.2	1.3	8.0	1.25	1.0	.6	.7	.5	.2	.4
11	.2	.2	.2	1.2	5.45	1.15	1.0	1.05	.6	.5	.2	.4
12	.2	.2	.2	1.2	4.75	1.1	1.0	4.1	.6	.5	.2	.4
13	.2	.2	.2	1.2	4.35	3.05	1.0	4.0	.6	.5	.2	.4
14	.2	.2	.2	1.2	3.45	3.0	1.0	3.8	.55	.4	.2	.4
15	.2	.2	.2	1.4	3.75	1.95	.95	2.8	.4	.4	.2	.4
16	.2	.2	.2	2.3	3.15	1.6	.8	2.3	.4	.3	.2	.2
17	.2	.2	.2	2.5	2.7	1.3	.7	1.75	.35	.2	.2	.2
18	.2	.2	.2	2.1	2.3	1.0	.6	1.55	.25	.2	.2	.2
19	.2	.2	.2	2.0	3.4	1.0	.6	1.1	.2	.7	.2	.2
20	.2	.2	.2	2.0	6.3	1.0	.8	1.0	.2	.35	.2	.2
21	.2	.2	.6	2.0	4.75	1.0	1.3	4.3	.2	.2	.2	.2
22	.2	.2	.7	2.0	3.7	1.0	.9	3.9	.2	.2	.2	.2
23	.2	.2	.8	1.5	2.9	1.0	.6	2.75	.2	.2	.2	.2
24	.2	.2	.8	1.4	2.55	1.0	.6	1.9	.2	.6	.2	.2
25	.2	.2	1.0	1.3	2.45	1.0	.6	1.6	1.3	.9	.2	.2
26	.2	.2	1.0	1.3	2.1	1.0	.8	1.25	1.1	.9	.2	.2
27	.2	.2	1.0	2.0	2.0	1.0	.6	1.0	.95	.85	.2	.2
28	.2	.2	1.0	3.3	1.9	1.0	.6	1.0	.75	.8	.2	.2
29	.2	.2	1.0	4.3	....	1.0	.6	1.0	.6	.9	.2	.2
30	.2	.2	1.0	3.6	....	1.0	.6	1.0	.9	1.6	.3	.2
31	.2	....	1.0	2.9	....	1.0	....	1.0	....	1.1	.7	....
1918-19												
1	.2	1.05	1.0	7.7	1.4	1.7	1.4	1.2	1.0	1.1	.6	.4
2	.2	1.0	1.0	11.4	1.4	1.4	1.4	1.2	1.0	1.0	.6	.3
3	.2	.9	1.0	7.3	1.4	1.4	1.4	1.2	1.0	1.0	.6	.2
4	.2	.7	1.0	5.5	1.4	1.5	1.2	1.2	1.0	1.0	.6	.2
5	.2	.6	1.0	3.6	1.4	1.9	1.2	1.2	1.0	1.0	.6	.2
6	.2	.6	1.0	2.9	1.4	1.9	1.2	1.2	1.0	1.0	.6	.2
7	.2	.6	1.0	2.5	1.2	2.7	1.2	1.2	1.3	1.0	.6	.2
8	.2	.6	1.0	2.4	1.2	3.75	1.3	1.6	1.4	1.0	.6	.2
9	.2	.6	1.0	2.3	1.2	4.75	1.7	3.8	1.2	1.0	.6	.2
10	.2	.6	1.0	2.0	1.2	5.8	2.7	6.4	1.2	1.0	.6	.2
11	.2	.6	2.7	2.0	1.2	4.6	4.5	5.4	1.0	1.0	.6	.2
12	.2	.6	3.0	2.0	1.2	3.4	4.9	4.6	1.1	1.0	.6	.2
13	.2	.6	2.9	1.9	1.2	2.9	4.3	4.1	1.3	1.0	.6	.2
14	.2	.6	3.4	1.5	1.2	2.5	3.8	3.4	1.0	1.0	.6	.2
15	.2	.6	3.9	1.2	1.2	2.4	3.1	2.7	1.0	1.0	.6	.2
16	.2	.6	3.7	1.2	1.2	4.5	2.6	2.3	1.0	1.0	.6	.2
17	.2	.6	3.3	1.2	1.2	7.6	2.6	2.0	1.0	1.0	.6	.2
18	.2	.8	2.9	1.2	1.2	6.8	2.6	2.0	1.0	1.0	.6	.2

Daily gage height, in feet, of Elkhorn Creek at Forks of Elkhorn, Ky., for the years ending September 30, 1915-1920—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1918-19												
19	.2	1.9	2.5	1.2	1.2	5.7	2.6	2.4	1.0	1.0	.6	.2
20	.2	1.7	2.1	1.2	1.2	4.6	2.4	2.9	1.0	1.0	.6	.2
21	.2	1.2	2.0	1.2	1.2	2.9	2.3	2.8	1.0	1.0	.6	.2
22	.2	1.2	2.0	1.2	1.2	2.2	2.2	2.8	1.0	.9	.6	.2
23	.2	1.0	2.2	1.2	1.2	1.8	2.2	2.8	1.0	.8	.6	.2
24	.3	1.0	2.7	1.5	1.2	1.8	2.2	3.0	1.0	.8	.6	.2
25	.4	1.0	3.1	1.6	1.5	1.8	2.1	3.0	1.0	.6	.6	.2
26	.4	1.0	2.9	1.6	1.9	1.7	1.8	3.0	1.2	.6	.6	.2
27	.4	1.0	2.5	1.6	1.75	1.6	1.8	2.9	1.2	.6	.6	.2
28	.6	1.0	2.1	1.4	1.65	1.6	1.8	2.5	1.2	.6	.5	.2
29	.9	1.0	1.8	1.4	....	1.6	1.7	2.1	1.2	.6	.4	.2
30	1.3	1.0	1.7	1.4	....	1.6	1.4	1.7	1.2	.6	.4	.2
31	1.25	....	2.1	1.4	....	1.5	....	1.3	....	.6	.4	....
1919-20												
1	.2	7.6	3.5	1.2	2.0	1.4	2.9	2.4	1.8	.6	.4	2.8
2	.2	13.45	3.1	1.2	1.9	1.4	2.8	2.4	1.8	.6	.4	2.6
3	.2	9.1	2.6	1.2	1.8	1.4	2.8	2.4	1.5	.6	.4	2.6
4	.2	6.1	2.6	1.2	1.8	1.4	3.2	2.4	1.1	.6	.4	2.6
5	.2	4.7	2.6	1.2	1.7	1.4	3.6	2.4	.8	.6	.4	2.6
6	.4	3.5	5.5	1.3	1.6	1.4	3.1	2.4	.8	.6	.4	2.6
7	.4	2.9	12.5	2.0	1.6	1.4	2.7	2.4	.8	.6	.4	2.6
8	.4	2.5	12.0	4.1	1.6	1.4	2.6	2.4	.8	.6	1.0	2.6
9	.4	2.4	8.2	5.9	1.5	1.4	2.6	2.2	.8	.6	2.4	2.6
10	.4	2.6	6.7	9.3	1.4	1.8	2.6	2.2	.8	.6	3.8	2.6
11	.4	2.9	5.1	12.0	1.4	4.4	2.6	2.0	.8	.4	5.4	2.6
12	.4	2.2	4.4	10.6	1.4	5.7	2.7	1.8	.8	.4	6.8	3.4
13	.4	2.0	6.5	5.9	1.4	4.7	3.0	1.8	.8	.4	8.0	4.0
14	5.2	2.0	8.5	3.5	1.4	3.7	3.0	1.7	.8	.4	9.2	5.6
15	5.5	2.0	5.5	2.9	1.4	3.0	2.8	1.6	.8	.4	9.3	6.7
16	4.4	2.0	4.7	2.5	1.4	4.6	2.6	1.6	.8	.4	8.4	5.7
17	3.9	1.8	4.2	2.1	1.4	6.8	2.6	1.7	.8	.4	7.5	4.6
18	3.4	1.6	4.0	2.0	1.4	6.0	2.7	2.1	.8	.4	6.4	3.9
19	2.9	1.6	3.9	2.0	1.4	5.3	4.0	1.9	.8	.4	5.5	2.7
20	2.5	1.6	3.5	2.0	1.4	4.8	8.2	1.6	.8	.4	4.5	2.6
21	2.1	1.6	3.1	4.2	1.4	4.0	8.2	1.4	.8	.4	4.2	2.6
22	1.7	1.6	2.7	8.2	1.4	3.3	7.6	1.4	.8	.4	5.4	2.6
23	1.4	1.6	2.3	10.5	1.4	3.0	6.8	1.4	.8	.4	5.6	2.6
24	1.4	1.6	2.0	9.0	1.4	3.0	6.1	1.4	.8	.4	4.4	2.6
25	1.4	4.0	2.0	7.0	1.4	3.0	5.7	1.4	.8	.4	3.8	2.6
26	1.6	8.0	1.5	5.7	1.4	3.0	5.1	1.4	.8	.4	3.8	2.6
27	2.8	10.4	1.4	4.6	1.4	3.0	4.5	1.4	.8	.4	3.4	2.6
28	4.6	6.7	1.4	3.9	1.4	3.0	3.9	1.4	.8	.4	3.3	2.6
29	3.0	5.4	1.3	3.2	1.4	3.0	3.3	1.4	.8	.4	3.2	2.6
30	3.4	4.3	1.2	2.6	....	2.9	2.7	1.4	.8	.4	3.2	2.6
31	4.6	....	1.2	2.1	....	2.5	....	1.7	....	.4	3.2	....

Daily discharge, in second feet, of Elkhorn Creek at Forks of Elkhorn, Ky., for the years ending September 30, 1915-1918.

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1915						1915					
1	135	482	180	180	335	16	204	305	390	320	254
2	135	1,710	196	180	320	17	196	278	335	1,140	455
3	180	1,540	222	222	305	18	196	278	305	1,880	835
4	180	1,060	320	910	292	19	180	243	278	910	730
5	164	1,540	420	800	1,540	20	180	222	243	910	482
6	164	662	352	662	2,420	21	180	213	204	910	320
7	222	1,380	320	455	1,620	22	455	213	180	1,380	266
8	730	1,300	1,380	320	1,140	23	1,220	196	180	948	254
9	432	1,140	2,600	243	730	24	1,060	188	180	835	254
10	292	835	2,330	213	482	25	835	180	180	765	254
11	292	510	1,710	213	390	26	630	180	180	510	254
12	266	390	1,060	213	335	27	630	180	180	370	254
13	232	335	695	213	335	28	750	180	180	335	254
14	213	335	540	213	305	29	872	180	180	335	254
15	213	335	455	910	278	30	695	172	180	455	254
						31	540		180	390	

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	2,420	213	335	2,150	4,620	662	730	196	135	172	135	109
2	2,700	213	335	2,060	3,390	570	600	196	135	149	135	109
3	1,970	213	335	1,800	2,240	570	482	204	135	142	135	109
4	1,140	213	335	1,460	1,540	482	390	278	135	128	135	109
5	765	213	335	1,380	1,220	410	320	243	135	122	135	109
6	540	213	335	1,620	1,060	370	266	213	278	122	135	109
7	432	213	335	1,380	872	1,710	232	213	600	122	122	109
8	352	213	335	910	730	1,620	232	213	305	122	122	109
9	335	213	335	910	600	1,220	266	204	204	122	109	109
10	335	213	335	910	482	835	305	180	204	122	109	109
11	305	213	335	2,420	455	600	254	180	232	122	135	109
12	278	213	352	6,280	510	482	213	180	335	122	135	109
13	254	213	390	8,730	3,820	432	213	172	254	122	122	109
14	232	335	410	4,260	3,180	370	213	142	204	188	335	109
15	213	1,460	410	2,600	2,060	1,540	213	116	254	180	1,380	109
16	213	1,710	1,380	2,060	1,710	910	213	109	266	142	540	109
17	213	1,140	12,700	1,380	1,710	910	213	109	305	135	232	109
18	213	948	13,200	910	1,620	835	213	109	243	135	135	109
19	222	3,080	6,000	662	1,220	730	213	109	5,240	2,420	122	109
20	232	2,980	3,600	540	1,060	630	213	109	4,040	765	122	109
21	213	1,880	2,420	432	765	570	213	109	1,880	695	109	109
22	213	1,300	1,620	1,540	600	510	213	109	1,140	482	188	109
23	213	985	1,300	1,380	540	455	213	109	695	390	135	109
24	213	800	948	1,060	948	390	213	109	540	204	135	109
25	213	662	2,600	1,060	1,800	335	213	109	410	164	122	109
26	213	540	1,880	872	1,620	410	213	109	305	213	122	109
27	213	432	1,540	730	1,220	1,620	213	109	278	164	109	109
28	213	410	1,710	600	872	1,620	196	109	266	164	109	116
29	213	370	4,500	1,710	800	1,380	196	109	222	142	109	149
30	213	335	4,500	6,420		1,060	196	135	188	135	109	116
31	213		2,790	5,480		872		135		135	109	

Daily discharge, in second feet, of Elkhorn Creek at Forks of Elkhorn, Ky., for the years ending September 30, 1915- 1918—Contiued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
1	109	109	109	695	630	630	570	164	410	66	86	57
2	109	109	109	630	630	1,140	7,020	164	695	66	76	49
3	109	109	109	5,240	570	1,460	3,920	164	455	66	76	49
4	109	109	109	2,790	410	2,150	2,240	164	305	66	76	49
5	109	109	1,380	3,820	335	2,150	2,600	164	278	66	66	49
6	109	109	305	3,390	335	1,620	4,740	135	232	66	62	49
7	109	109	232	2,600	335	1,460	2,980	135	455	66	57	49
8	109	109	196	1,460	254	2,880	570	135	1,460	66	57	92
9	109	109	196	835	180	4,860	1,540	135	8,550	66	57	116
10	109	109	164	765	164	4,040	1,220	135	2,600	66	57	86
11	109	109	164	570	164	4,150	765	135	1,380	66	57	62
12	109	109	135	510	164	5,870	570	135	630	66	57	57
13	109	109	135	510	164	4,620	370	135	410	66	53	57
14	109	109	135	510	164	5,240	335	135	455	66	49	57
15	109	109	135	510	164	3,080	278	135	305	66	49	57
16	109	109	135	510	164	2,240	278	135	254	66	49	49
17	109	109	135	510	164	1,710	278	135	180	66	49	49
18	109	109	135	455	232	1,300	278	135	135	66	49	49
19	164	109	135	278	370	835	232	103	135	66	49	49
20	128	109	135	196	335	630	213	76	135	86	49	49
21	122	109	135	2,330	335	3,600	180	76	135	109	49	49
22	109	109	135	13,400	335	2,330	135	81	135	86	49	49
23	109	109	135	6,720	570	2,150	135	109	135	76	49	49
24	109	109	232	2,980	910	3,390	135	86	109	66	49	49
25	109	109	410	2,060	570	2,420	135	86	109	254	49	49
26	109	109	765	1,380	370	1,460	135	86	97	305	49	49
27	109	109	6,570	910	335	1,620	135	5,360	86	180	49	49
28	109	109	4,500	835	370	1,060	135	5,360	86	122	49	49
29	109	109	2,980	765		695	135	2,150	76	86	49	49
30	109	109	1,710	765		455	164	765	66	66	66	49
31	109		1,060	630		305		455		76	62	
1917-18												
1	49	49	49	135	455	266	135	86	109	128	109	81
2	49	49	49	135	335	222	135	86	109	103	86	66
3	49	49	49	135	335	213	164	86	109	81	81	97
4	49	49	49	135	335	213	149	86	109	76	66	109
5	49	49	49	149	335	213	135	86	109	76	66	109
6	49	49	49	370	335	213	135	86	109	76	66	109
7	49	49	49	455	1,540	232	135	86	135	76	66	86
8	49	49	49	570	6,000	213	135	86	135	109	57	71
9	49	49	49	278	8,190	204	135	86	135	97	49	66
10	49	49	49	180	6,000	172	135	86	97	76	49	66
11	49	49	49	164	2,980	156	135	142	86	76	49	66
12	49	49	49	164	2,420	149	135	1,800	86	76	49	66
13	49	49	49	164	2,060	910	135	1,710	86	76	49	66
14	49	49	49	164	1,220	910	135	1,540	81	66	49	66
15	49	49	49	196	1,540	320	128	765	66	66	49	66
16	49	49	49	455	1,060	232	109	455	66	57	49	49
17	49	49	49	570	695	180	97	266	62	49	49	49
18	49	49	49	370	455	135	86	222	53	49	49	49
19	49	49	49	335	1,220	135	86	149	49	97	49	49
20	49	49	49	335	3,920	135	109	135	49	62	49	49
21	49	49	86	335	2,420	135	180	1,970	49	49	49	49
22	49	49	97	335	1,460	135	122	1,620	49	49	49	49
23	49	49	109	213	835	135	86	730	49	49	49	49
24	49	49	109	196	600	135	86	305	49	86	49	49
25	49	49	135	180	540	135	86	232	180	122	49	49
26	49	49	135	180	370	135	109	172	149	122	49	49
27	49	49	135	335	335	135	86	135	128	116	49	49
28	49	49	135	1,140	305	135	86	135	103	109	49	49
29	49	49	135	1,970		135	86	135	86	122	49	49
30	49	49	135	1,380		135	86	135	122	232	57	49
31	49		135	835		135		135		149	97	

Monthly discharge of Elkhorn Creek at Forks of Elkhorn, Ky. for the years ending September 30, 1915-1920.

(Drainage area, 415 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1915					
May	1,220	135	409	0.986	1.14
June	1,710	172	559	1.35	1.51
July	2,600	180	527	1.27	1.46
August	1,880	180	592	1.43	1.65
September	2,420	254	540	1.30	1.45
1915-16					
October	2,700	213	507	1.22	1.41
November	3,080	213	738	1.78	1.99
December	13,200	335	2,190	5.28	6.09
January	8,730	432	2,120	5.11	5.89
February	4,620	455	1,490	3.59	3.87
March	1,710	335	810	1.95	2.25
April	730	196	269	.648	.72
May	278	109	152	.366	.42
June	5,240	135	652	1.57	1.75
July	2,420	122	276	.665	.77
August	1,380	109	190	.458	.53
September	149	109	111	.267	.30
The year	13,200	109	792	1.91	25.99
1916-17					
October	164	109	112	0.270	0.31
November	109	109	109	.263	.29
December	6,570	109	739	1.78	2.05
January	13,400	196	1,920	4.63	5.34
February	910	164	347	.836	.87
March	5,870	305	2,310	5.57	6.42
April	7,020	135	1,080	2.60	2.90
May	5,360	76	560	1.35	1.56
June	8,550	66	683	1.65	1.84
July	305	66	89.2	.215	.25
August	86	49	56.4	.136	.16
September	116	49	55.7	.134	.15
The year	13,400	49	677	1.63	22.14
1917-18					
October	49	49	49	0.118	0.14
November	49	49	49	.118	.13
December	135	49	75	.181	.21
January	1,970	135	405	.976	1.13
February	8,190	305	1,720	4.14	4.31
March	910	135	223	.537	.62
April	180	86	119	.287	.62
May	1,970	86	443	1.07	1.23
June	180	49	93.5	.225	.25
July	232	49	89.6	.216	.25
August	109	49	57.4	.138	.16
September	109	49	64.2	.155	.17
The year	8,190	49	273	.658	8.92

Monthly discharge of Elkhorn Creek at Forks of Elkhorn, Ky., for the years ending September 30, 1915-1920.

Month	Discharge in second-feet				Run-off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1918-19					
October	180	49	62.6	.151	.17
November	305	86	123	.296	.33
December	1,620	135	530	1.28	1.48
January	12,300	164	1,110	2.67	3.08
February	305	164	184	.443	.46
March	5,480	196	1,160	2.80	3.23
April	2,510	164	597	1.44	1.61
May	4,040	164	826	1.99	2.29
June	196	135	147	.354	.40
July	149	86	122	.294	.34
August	86	66	83.7	.202	.23
September	66	49	49.8	.120	.13
The year	12,300	49	421	1.01	13.75
1919-20					
October	3,080	49	702	1.69	1.95
November	16,800	232	2,380	5.73	6.39
December	14,800	164	2,510	6.05	6.98
January	13,600	164	2,780	6.70	7.72
February	335	196	217	.523	.56
March	4,500	196	1,240	2.99	3.45
April	6,280	630	1,790	4.31	4.81
May	510	196	319	.769	.89
June	278	109	125	.301	.34
July	86	66	72.5	.175	.20
August	8,010	66	2,320	5.59	6.44
September	4,380	630	1,080	2.60	2.90
The year	16,800	49	1,300	3.13	42.63

EAGLE CREEK AT GLENCOE, KY.

LOCATION.—At county highway bridge half a mile south of Glencoe, Gallatin County.

DRAINAGE AREA.—445 square miles (United States Engineer Corps).

RECORDS AVAILABLE.—April 29, 1915, to September 30, 1920.

GAGE.—Vertical staff attached to upstream side of first pier from left abutment of bridge; read by Anna Connelly.

DISCHARGE MEASUREMENTS.—Made from bridge.

CHANNEL AND CONTROL.—Bed of stream sand and loose stone; probably permanent. Small island covered with trees about 250 feet below bridge. Point of control not determined.

ICE.—Stage-discharge relation probably not affected by ice except in very cold winters.

ACCURACY.—Stage-discharge relation probably permanent;

not affected by ice. Rating curve well defined between 50 and 15,000 second-feet, extended beyond these limits. Gage read twice daily to tenths. Daily discharge ascertained by applying mean daily gage height to rating table. Records good.

COOPERATION.—Base data furnished by United States Engineer Corps.

Discharge measurements of Eagle Creek at Glencoe, Ky., during the years ending September 30, 1915-1918.

Date	Made by—	Gage Height	Dis-charge	Date	Made by—	Gage Height	Dis-charge
		Ft.	Sec.-ft.			Ft.	Sec.-ft.
1915				1916			
Apr. 29	R. S. Durrell	.90	30	June 20	C. J. Thiebaud	5.61	2,080
May 21	R. S. Durrell	1.62	90	20	C. J. Thiebaud	4.73	1,500
29	R. S. Durrell	4.14	1,020	1917			
				May 12	C. J. Thiebaud	1.40	83
July 8	C. J. Thiebaud	12.70	10,900	1918			
9	C. J. Thiebaud	6.20	2,830	June 21	Hopkins & Kidwell	.61	5.2

Daily gage height, in feet, of Eagle Creek at Glencoe, Ky., during the years ending September 30, 1915-1920.

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1915						1915					
1		2.15	2.25	5.35	1.30	16	1.10	3.90	1.50	3.25	1.20
2		5.55	2.05	1.95	1.15	17	1.00	2.50	3.25	2.30	1.10
3		5.00	2.45	1.75	1.10	18	1.00	2.00	2.10	2.30	1.45
4	2.65	3.15	1.85	2.10	1.10	19	1.00	2.65	1.95	2.40	4.05
5	2.10	2.50	3.25	1.75	7.25	20	1.00	7.15	1.45	2.50	2.35
6	1.85	2.15	2.70	1.85	7.95	21	1.65	4.30	1.20	4.55	2.10
7	2.20	2.00	1.90	1.40	3.55	22	1.90	2.65	1.15	3.75	1.55
8	3.20	3.60	12.90	1.15	4.25	23	5.95	2.10	1.05	2.75	1.25
9	2.50	2.35	5.10	.95	2.50	24	3.50	1.85	.95	2.85	1.20
10	1.95	1.60	2.85	.90	2.05	25	2.95	1.65	.85	5.86	1.10
11	1.70	1.75	11.60	.90	2.00	26	4.70	1.35	.70	2.30	1.00
12	1.50	1.55	3.70	.90	2.00	27	3.00	1.15	.60	1.55	.90
13	1.40	1.45	2.65	.90	1.60	28	2.70	1.05	.60	1.30	.90
14	1.30	1.40	2.30	.80	1.20	29	3.70	1.00	.60	1.30	.80
15	1.15	4.20	1.65	1.70	1.20	30	2.85	1.00	.50	3.20	.80
						31	2.50		.50	1.90	

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	1.90	0.70	1.20	3.75	7.10	2.20	2.45	1.75	2.05	0.95	0.70	0.90
2	4.60	.70	1.20	6.05	3.90	2.35	2.30	1.60	1.55	.90	.70	3.05
3	2.75	.70	1.20	3.80	2.85	2.95	2.35	1.75	3.55	.90	.60	3.05
4	2.00	.60	1.20	2.75	2.50	2.50	2.30	2.10	1.85	.85	.50	2.00
5	4.40	.60	1.20	2.50	2.40	2.50	2.20	2.90	1.25	.80	.50	1.50

Daily gage height, in feet, of Eagle Creek at Glencoe, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
6	2.20	.60	1.20	3.85	3.70	4.20	2.00	2.25	2.05	.70	.45	1.30
7	1.50	.60	1.20	3.70	3.65	9.75	2.00	1.85	3.10	.60	.40	2.35
8	1.20	.60	1.15	2.60	2.85	4.45	2.30	1.75	3.60	.50	.40	1.20
9	1.20	.60	1.10	2.50	2.45	2.90	3.80	1.55	2.45	.50	.40	1.20
10	1.10	.75	1.10	3.95	2.30	2.50	3.25	1.45	2.00	.45	.50	1.05
11	1.00	.70	1.05	9.50	2.25	2.35	2.75	1.30	3.45	.40	.55	.90
12	.90	1.65	1.40	11.95	4.20	2.25	2.40	1.30	2.45	.40	.60	.65
13	.90	1.45	2.95	10.10	10.10	2.20	2.30	1.20	2.10	.40	.85	.60
14	.90	2.05	2.80	4.40	4.65	2.20	2.05	1.15	1.85	.40	1.00	.60
15	.90	6.70	2.10	2.80	3.60	8.55	2.15	1.10	1.55	.40	1.00	.60
16	1.30	4.25	3.10	2.80	2.75	4.65	2.00	1.00	1.60	.30	.80	.50
17	1.20	2.30	19.50	2.30	4.20	3.55	2.00	1.10	3.25	2.10	1.60	.50
18	1.25	2.00	10.80	2.20	4.50	3.10	1.85	1.10	4.00	1.30	1.35	.50
19	1.10	9.00	4.05	2.00	3.50	2.90	1.80	1.00	7.90	1.25	1.05	.50
20	1.10	5.45	2.85	2.25	2.85	2.65	1.85	1.00	5.40	3.25	.90	.40
21	1.45	4.80	2.35	2.55	2.55	2.60	2.60	1.00	6.35	5.00	1.15	.40
22	1.65	2.15	2.30	4.65	2.40	2.50	2.00	1.10	3.00	3.25	.95	.40
23	1.50	2.00	2.10	4.65	2.40	2.25	1.75	1.50	2.25	2.10	.90	.30
24	1.35	1.80	2.00	2.90	6.95	2.15	1.70	1.30	2.05	1.85	.80	.20
25	1.15	1.70	8.45	2.60	5.20	2.10	1.60	1.25	1.90	1.45	.70	.20
26	1.00	1.50	4.90	2.45	3.15	3.20	1.90	1.20	1.55	1.30	.70	.20
27	1.00	1.50	3.05	2.40	2.60	6.90	2.10	1.00	1.45	1.30	.65	.20
28	.90	1.40	5.95	2.50	2.35	3.95	2.05	.95	1.40	1.00	.80	.20
29	.90	1.40	10.05	5.95	2.30	3.10	2.00	.95	1.30	.90	1.15	.25
30	.80	1.40	7.90	14.35		2.90	1.90	3.75	1.20	.80	.90	.10
31	.80		4.00	7.45		2.65		2.70		.70	.70	
1916-17												
1	0.10	0.60	1.10	1.95	2.50	2.90	2.55	2.20	8.70	0.70	1.20	1.05
2	.10	.60	1.10	1.80	2.20	3.90	13.75	1.75	7.70	.70	1.00	.75
3	.10	.50	1.00	11.80	1.90	3.65	7.25	1.50	4.65	3.10	1.00	.60
4	.10	.50	.90	6.90	1.90	4.75	3.15	1.80	2.80	1.95	.70	.50
5	.10	.50	2.35	9.40	1.90	3.90	6.30	1.60	3.85	1.55	.50	.40
6	.10	.50	2.15	6.00	1.90	3.15	9.50	1.55	3.05	1.25	.50	.30
7	.10	.50	2.20	3.80	1.90	3.75	3.80	1.40	2.55	1.00	.40	.30
8	.10	.50	1.75	2.60	1.90	6.85	3.20	1.40	2.45	.90	.40	2.80
9	.10	.50	1.60	2.20	1.90	6.60	4.05	1.40	6.80	.75	.30	2.20
10	.10	.60	1.50	2.10	1.90	4.80	3.60	1.40	6.25	.70	.30	1.50
11	.10	.50	1.30	2.00	1.90	3.95	3.05	1.60	3.15	.65	.30	1.30
12	.10	.50	1.10	1.70	1.90	7.95	2.60	3.35	2.50	.60	.20	1.20
13	.10	.50	1.00	2.05	1.90	10.10	2.50	2.50	2.10	.50	.20	1.20
14	.10	.50	.90	1.80	1.90	8.95	2.30	1.75	4.00	.50	.20	1.00
15	.10	.50	.90	1.50	1.90	5.05	2.20	1.85	2.75	.60	.20	.90
16	.10	.50	.90	1.50	1.90	3.20	2.20	1.40	2.15	.90	.20	.70
17	.10	.50	.90	1.50	1.90	2.75	1.95	1.30	2.00	1.90	.20	.60
18	.10	.50	.90	1.50	1.50	2.70	1.80	1.20	1.80	1.35	.20	.55
19	.10	.50	.90	1.50	1.70	2.50	1.75	1.10	1.60	2.15	.20	.40
20	.80	.50	.90	1.50	2.65	2.30	1.70	1.00	1.45	1.45	.20	.40
21	.80	.50	.90	7.25	2.45	8.30	1.70	.90	1.35	1.35	.20	.40
22	.80	.50	.90	14.45	2.10	5.40	1.60	.90	1.30	1.50	.20	1.00
23	1.20	.65	1.75	4.45	4.70	3.25	1.50	.80	1.20	1.70	.20	.65
24	1.50	1.80	2.30	2.65	6.20	8.15	1.50	.80	1.10	.90	.20	.50
25	1.40	2.20	2.20	2.30	2.40	3.80	1.50	.80	1.00	1.90	.20	.50
26	1.20	1.90	2.85	2.05	2.15	2.85	1.45	.75	1.00	2.10	.10	.40
27	1.05	1.55	15.20	2.00	2.70	5.80	1.40	14.20	.90	1.85	.10	.30
28	.95	1.55	8.65	3.10	3.00	3.75	1.40	19.90	.80	1.45	.10	.30
29	.85	1.40	4.25	3.60		2.85	1.40	5.75	.80	1.20	.10	.20
30	.80	1.40	2.80	4.20		2.50	2.70	3.10	.75	1.20	.10	.20
31	.60		2.55	2.90		2.35		3.45		1.20	1.15	

Daily gage height, in feet, of Eagle Creek at Glencoe, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
1	0.2	1.5	0.2	Est.	2.0	2.5	1.7	2.15	1.35	2.35	2.5	2.7
2	.2	1.15	.75	1.0	2.0	2.2	1.6	2.0	1.45	1.75	2.2	2.0
3	.1	1.0	1.15	1.0	2.0	2.1	5.35	1.9	1.5	1.35	1.8	1.95
4	.1	.8	1.1	1.0	2.0	2.0	4.4	1.8	1.2	1.2	1.45	3.15
5	.1	.7	1.0	1.0	2.0	2.25	2.8	1.8	1.05	1.05	1.25	2.7
6	.1	.6	.9	5.3	2.0	2.2	2.35	1.7	1.0	1.0	1.1	2.85
7	.1	.5	.8	7.7	4.35	2.1	2.1	1.6	1.2	1.0	1.05	2.25
8	.1	.5	.8	3.6	8.05	2.0	2.0	1.6	1.85	1.0	.9	1.7
9	.1	.5	.8	2.6	15.0	2.0	1.95	1.55	2.45	.85	.8	1.45
10	.1	.4	.8	2.0	6.0	1.85	1.85	1.5	2.05	.8	.7	1.25
11	.1	.4	.8	2.0	2.75	1.7	1.8	1.55	1.75	.8	.6	1.2
12	.2	.4	.8	2.0	4.75	1.7	1.8	4.5	1.45	.75	.6	1.2
13	.2	.4	.8	2.0	4.75	5.35	1.7	8.4	1.25	.8	.9	1.7
14	.1	.3	.8	2.0	2.25	9.1	1.7	5.55	1.05	.65	.75	2.3
15	.1	.3	.8	2.0	2.0	3.7	1.6	3.15	1.0	.6	.7	1.9
16	.1	.3	.8	2.0	2.0	2.85	1.5	2.7	.95	.6	.7	1.65
17	.1	.25	.8	2.0	2.0	2.45	2.2	2.35	.9	.6	.6	1.3
18	.1	.2	.8	2.0	2.0	2.25	1.95	2.3	.8	.5	.6	1.2
19	.4	.2	.8	2.0	2.4	2.15	1.65	2.1	.8	.5	.6	1.2
20	.3	.2	.8	2.0	10.0	2.05	1.50	2.1	.7	.5	.5	1.1
21	.6	.2	.8	2.0	4.3	2.0	3.8	2.1	.6	.5	.5	1.1
22	.4	.2	3.5	2.0	2.95	1.9	3.3	2.65	.6	.5	.5	1.0
23	.6	.2	......	2.0	2.55	1.9	2.5	2.45	.6	.5	.4	.9
24	.55	.2	......	2.0	2.45	1.9	2.2	2.15	.6	.9	.4	.8
25	.4	.2	......	2.0	2.3	2.75	5.0	2.00	.65	.65	.4	.8
27	.3	.2	......	2.0	3.4	2.45	3.7	1.75	1.6	.6	.45	.7
26	.4	.2	......	2.0	4.05	2.15	4.45	1.6	2.6	2.8	.65	.6
28	.3	.2	......	2.0	2.7	2.0	3.1	1.45	2.15	2.25	1.85	.5
29	.2	.2	......	2.0	......	1.85	2.65	1.4	2.65	1.75	1.8	.5
30	2.6	.2	......	2.0	......	1.8	2.45	1.25	2.25	6.35	1.15	.5
31	2.0	......	......	2.0	......	1.8	......	1.15	......	3.8	3.6	......
1918-19												
1	.5	2.0	2.1	11.2	1.9	2.5	2.4	2.8	2.1	2.5	.5	.3
2	.5	2.0	1.85	10.15	1.8	2.9	2.3	3.9	2.0	2.45	.5	.2
3	.5	1.95	1.55	3.9	1.8	2.45	2.3	2.9	1.9	2.4	.5	.2
4	.5	1.7	1.45	2.8	1.8	2.3	2.2	2.35	1.8	1.9	.4	.2
5	.5	1.35	1.35	2.45	1.8	4.65	2.2	2.15	1.7	1.35	.4	.2
6	.5	1.3	1.3	2.2	1.7	5.65	2.1	2.05	1.6	1.05	.4	.2
7	.5	1.2	1.15	2.1	1.7	3.3	2.0	2.0	1.55	.9	.4	.2
8	.4	1.05	1.1	2.0	1.6	2.75	2.0	2.0	1.6	.9	.3	.2
9	.3	1.0	1.25	1.9	1.6	8.45	2.05	8.4	2.15	.9	.3	.2
10	.2	1.0	7.05	1.9	1.5	4.5	2.05	8.8	1.95	6.6	.3	.2
11	.2	.95	6.35	1.8	1.5	3.15	6.0	4.75	1.75	2.2	.3	.2
12	.2	.9	4.3	1.7	1.5	2.85	3.8	3.4	1.7	1.65	.3	.2
13	.2	.8	8.75	1.6	1.5	2.65	2.7	2.9	1.6	1.45	.3	.2
14	.2	.8	7.5	1.85	1.5	2.6	2.45	2.95	1.5	1.25	.3	.2
15	.2	.8	6.25	1.95	1.5	2.6	2.3	2.75	1.4	1.25	.3	.2
16	.2	.8	3.6	2.0	1.8	4.1	2.85	2.55	2.5	2.1	.3	.2
17	.2	.8	2.75	2.0	2.15	1.66	3.4	2.5	1.95	1.2	.3	.2
18	.2	4.75	2.45	2.0	2.1	7.2	2.85	2.7	2.3	1.0	.3	.2
19	.2	3.5	2.25	2.0	2.3	4.0	2.7	2.55	1.75	.9	.3	.2
20	.5	2.8	2.05	1.9	2.3	3.2	2.45	3.85	1.65	.9	.3	.2
21	.6	2.5	2.0	1.8	2.35	2.95	2.25	3.75	1.45	.9	.3	.2
22	.5	1.9	2.6	1.8	3.25	2.65	2.1	2.75	1.2	.8	.3	.2
23	.5	1.8	3.2	3.95	2.95	2.5	2.1	2.65	2.5	.8	.3	.2
24	.65	1.65	5.25	5.45	2.6	2.45	2.85	8.35	2.05	.8	.3	.2

Daily gage height, in feet, of Eagle Creek at Glencoe, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1918-19												
25	.6	1.5	5.3	3.45	2.5	2.4	2.95	4.85	3.9	.7	.3	.2
26	.95	1.35	3.3	2.8	2.5	2.4	2.3	3.2	7.25	.7	.3	.2
27	1.5	1.3	3.6	2.45	2.8	8.3	2.15	2.85	4.75	.7	.3	.2
28	2.6	2.55	2.4	2.25	2.5	4.3	2.0	2.65	3.4	.6	.3	.2
29	3.65	3.8	2.2	2.2	......	3.05	2.0	2.45	2.9	.9	.3	.2
30	2.7	2.7	2.05	2.1	......	2.75	2.7	2.25	2.55	.5	.3	.2
31	2.1	......	2.1	2.0	......	2.55	......	2.2	......	.5	.3	......
1919-20												
1	.2	9.9	3.65	1.7	2.7	2.4	2.0	2.35	1.8	1.2	.8	2.8
2	.2	12.1	2.85	1.6	2.6	2.25	2.25	2.2	2.3	1.1	.8	2.55
3	.2	4.7	2.45	1.5	2.85	2.1	2.2	2.2	2.65	1.0	.8	2.45
4	.2	3.0	2.25	1.3	5.3	2.2	2.4	2.2	3.15	.9	.8	2.35
5	.2	2.55	2.15	1.3	4.85	6.1	4.55	2.1	3.5	.8	.65	6.15
6	.2	2.25	4.7	1.3	3.45	3.65	2.8	2.1	2.85	.8	.45	5.05
7	.2	2.8	13.5	1.55	2.95	2.7	2.65	2.0	2.4	.8	.4	3.45
8	.2	2.1	5.45	11.05	2.8	2.45	3.5	1.9	2.3	.7	3.95	2.95
9	.2	2.0	8.25	13.9	2.8	2.25	2.65	1.85	2.15	.6	3.1	3.25
10	.2	2.25	7.75	6.6	4.55	2.2	2.35	1.8	2.0	.45	2.5	3.05
11	.5	4.3	3.75	3.1	3.8	5.0	2.15	1.8	2.0	.3	5.2	2.75
12	1.55	3.45	3.0	2.6	3.15	13.1	2.5	5.15	1.45	.3	3.55	2.45
13	1.15	2.8	14.35	2.45	2.85	6.5	3.5	5.65	1.4	.2	5.95	3.75
14	2.2	2.4	8.25	2.25	2.7	3.65	2.75	3.4	4.8	.3	4.7	3.3
15	5.7	2.15	3.65	2.2	2.35	3.1	2.55	3.0	2.95	3.2	5.75	2.45
16	4.65	2.0	2.9	2.65	2.0	9.5	2.4	2.65	2.25	2.5	4.6	2.4
17	4.0	1.9	2.7	3.8	2.0	9.5	2.3	2.3	1.85	1.75	3.1	2.25
18	3.25	1.8	2.6	2.7	2.3	4.05	2.3	3.2	1.8	1.7	2.15	2.0
19	2.6	1.7	2.6	2.5	2.3	12.25	2.6	3.9	1.55	1.45	1.95	2.0
20	1.9	1.7	2.25	2.4	2.2	6.55	17.1	4.85	1.5	1.25	1.85	2.0
21	1.65	1.6	1.95	5.7	4.1	3.6	13.6	3.35	1.5	.95	2.9	2.0
22	2.1	1.5	1.65	5.8	4.0	3.05	6.3	2.7	1.5	.75	4.9	2.0
23	2.1	1.5	1.6	8.4	3.8	2.85	3.5	2.45	1.45	.55	3.95	2.0
24	1.6	1.5	1.6	9.25	3.5	2.65	2.9	2.4	1.4	.45	3.35	2.0
25	1.45	1.5	1.6	3.9	2.9	2.55	2.7	2.45	1.4	1.8	2.95	2.0
26	3.8	15.25	1.5	3.0	2.35	2.5	2.65	2.3	1.4	1.55	2.85	2.0
21	6.15	11.0	1.5	3.75	2.2	2.4	2.75	2.2	1.3	1.2	2.1	2.0
28	3.7	3.95	1.8	4.7	2.65	2.3	2.95	2.1	1.3	1.05	4.65	2.3
29	2.65	4.4	1.7	3.45	2.45	2.7	2.75	2.0	1.3	.95	4.25	3.45
30	2.7	5.35	1.7	2.9	......	2.35	2.55	1.9	1.3	.85	4.4	2.6
31	5.0	......	1.7	3.1	......	2.2	......	1.8	......	.8	3.2	......

Daily discharge, in second feet, of Eagle Creek at Glencoe, Ky., for the years ending September 30, 1915-1918.

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1915						1915					
1	......	183	204	2,010	66	16	51	870	85	532	58
2	......	2,190	164	146	54	17	45	260	532	214	51
3	......	1,660	248	115	51	18	45	155	173	214	80
4	300	488	130	173	51	19	45	300	146	236	930
5	173	260	532	115	3,830	20	45	3,830	80	260	225
6	130	183	314	130	4,740	21	102	1,130	58	1,350	173
7	193	155	138	75	670	22	138	300	54	810	90

Daily discharge, in second feet, of Eagle Creek at Glencoe, Ky., for the years ending September 30, 1915-1918.

Day	May	June	July	Aug.	Sept.	Day	May	June	July	Aug.	Sept.
1915											
8	510	695	11,200	54	1,060	23	2,580	173	48	330	62
9	260	225	1,750	42	260	24	645	130	42	362	58
10	146	96	362	40	164	25	400	102	38	2,480	51
11	108	115	9,290	40	155	26	1,420	70	30	214	45
12	85	90	750	40	155	27	420	54	26	90	40
13	75	80	300	40	96	28	314	48	26	66	40
14	66	75	214	35	58	29	870	45	26	66	35
15	54	1,060	102	108	58	30	362	45	22	510	35
						31	260	....	22	138	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	138	30	58	810	3,720	193	248	115	164	42	30	40
2	1,350	30	58	2,580	870	225	214	96	90	40	30	442
3	330	30	58	810	362	400	225	115	670	40	26	442
4	155	26	58	330	260	260	214	173	130	38	22	155
5	1,200	26	58	260	236	260	193	380	62	35	22	85
6	193	26	58	810	750	1,060	155	204	164	30	20	66
7	85	26	58	750	722	6,890	155	130	465	26	18	225
8	58	26	54	286	362	1,200	214	115	695	22	18	58
9	58	26	51	260	248	380	810	90	248	22	18	58
10	51	32	51	930	214	260	532	80	155	20	22	48
11	45	30	48	6,510	204	225	330	66	622	18	24	40
12	40	102	75	9,850	1,060	204	236	66	248	18	26	28
13	40	80	400	7,280	7,280	193	214	58	173	18	38	26
14	40	164	345	1,200	1,350	193	164	54	130	18	45	26
15	40	3,300	173	345	695	5,420	183	51	90	18	45	26
16	66	1,060	465	345	330	1,350	155	45	96	14	35	22
17	58	214	21,600	214	1,060	670	155	51	532	173	96	22
18	62	155	8,200	193	1,280	465	130	51	930	66	70	22
19	51	5,900	930	155	645	380	122	45	4,620	62	48	22
20	51	2,010	362	204	362	300	130	45	2,010	532	40	18
21	80	1,500	225	273	273	286	286	45	2,980	1,660	54	18
22	102	183	214	1,350	236	260	155	51	420	532	42	18
23	85	155	173	1,350	236	204	115	85	204	173	40	14
24	70	122	155	380	3,610	183	108	66	164	130	35	11
25	54	108	5,200	286	1,840	173	96	62	138	80	30	11
26	45	85	1,580	248	488	510	138	58	90	66	30	11
27	45	85	442	236	286	3,500	173	45	80	66	28	11
28	40	75	2,580	260	225	930	164	42	75	45	35	11
29	40	75	7,150	2,580	214	465	155	42	66	40	54	12
30	35	75	4,620	13,500	....	380	138	810	58	35	40	9
31	35	....	930	4,050	....	300	....	314	....	30	30	....
1916-17												
1	9	26	51	146	260	380	273	193	5,540	30	58	48
2	9	26	51	122	193	870	12,600	115	4,390	30	45	32
3	9	22	45	9,570	138	722	3,830	85	1,350	465	45	26
4	9	22	40	3,500	138	1,500	488	122	345	146	30	22
5	9	22	225	6,380	138	870	2,880	96	810	90	22	18
6	9	22	183	2,580	138	488	6,510	90	442	62	22	14
7	9	22	193	810	138	810	810	75	273	45	18	14
8	9	22	115	286	138	3,400	510	75	248	40	18	345
9	9	22	96	193	138	3,190	930	75	3,400	32	14	193
10	9	26	85	173	138	1,500	695	75	2,780	30	14	85
11	9	22	66	155	138	930	442	96	488	28	14	66

Daily discharge, in second feet, of Eagle Creek at Glencoe, Ky., for the years ending September 30, 1915-1918—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
12	9	22	51	108	138	4,740	286	578	260	26	11	58
13	9	22	45	164	138	7,280	260	260	173	22	11	58
14	9	22	40	122	138	5,900	214	115	930	22	11	45
15	9	22	40	85	138	1,660	193	130	330	26	11	40
16	9	22	40	85	138	510	193	75	183	40	11	30
17	9	22	40	85	138	330	146	66	155	138	11	26
18	9	22	40	85	85	314	122	58	122	70	11	24
19	9	22	40	85	108	260	115	51	96	183	11	18
20	35	22	40	85	300	214	108	45	80	80	11	18
21	35	22	40	3,830	248	5,080	108	40	70	70	11	18
22	35	22	40	13,500	173	2,010	96	40	66	85	11	45
23	58	28	115	1,200	1,420	532	85	35	58	108	11	28
24	85	122	214	300	2,780	4,960	85	35	51	40	11	22
25	75	193	193	214	236	810	85	35	45	138	11	22
26	58	138	362	164	183	362	80	32	45	173	9	18
27	48	90	14,700	155	314	2,380	75	13,200	40	130	9	14
28	42	90	5,420	465	420	810	75	22,300	35	80	9	14
29	38	75	1,960	695	....	362	75	2,380	35	58	9	11
30	35	75	345	1,060	....	260	314	465	32	58	9	11
31	26	....	273	380	....	225	....	622	....	58	54	....
1917-18												
1	2	87	2	30	155	260	113	183	69	225	260	314
2	2	46	12	30	155	193	100	155	81	120	193	155
3	1	40	46	30	155	173	2,010	140	87	69	126	148
4	1	14	40	30	155	155	1,200	126	51	51	81	488
5	1	9	30	30	155	204	345	126	35	35	57	314
6	1	6	21	1,920	155	193	225	113	30	30	40	362
7	1	5	14	4,390	1,200	173	173	100	51	30	35	204
8	1	5	14	695	4,740	155	155	100	133	30	21	113
9	1	5	14	286	14,400	155	148	94	248	18	14	81
10	1	4	14	155	2,580	133	133	87	164	14	9	57
11	1	4	14	155	330	113	126	94	120	14	6	51
12	2	4	14	155	1,500	113	126	1,280	81	12	6	51
13	2	4	14	155	1,500	2,010	113	5,200	57	14	21	113
14	1	3	14	155	204	6,020	113	2,190	35	8	12	214
15	1	3	14	155	155	870	100	488	30	6	9	140
16	1	3	14	155	155	362	87	314	26	6	9	106
17	1	2	14	155	155	248	193	225	21	6	6	63
18	1	2	14	155	155	204	148	214	14	5	6	51
19	4	2	14	155	236	183	106	173	14	5	6	51
20	3	2	14	155	7,150	164	87	173	9	5	5	40
21	6	2	14	155	1,130	155	810	173	6	5	5	40
22	4	2	645	155	400	140	555	300	6	5	5	30
23	6	2	420	155	273	140	260	248	6	5	4	21
24	6	2	420	155	248	140	193	183	6	21	4	14
25	4	2	420	155	214	330	1,660	155	8	8	4	14
26	4	2	420	155	930	248	750	120	100	6	4	9
27	3	2	420	155	600	183	1,200	106	286	345	8	6
28	3	2	420	155	314	155	465	81	183	204	133	5
29	2	2	420	155	....	133	300	75	300	120	126	5
30	286	2	420	155	....	126	248	57	204	2,980	46	5
31	155	....	420	155	....	126	....	46	....	810	695	....

NOTE.—Gage washed out Dec. 23 to Jan. 1; dicharge estimated from weather records and comparison with records for other streams.

Monthly discharge of Eagle Creek at Glencoe, Ky., for the years ending September 30, 1915-1920.

(Drainage area, 445 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1915					
May 4-31	2,580	45	352	.791	.82
June	3,830	45	502	1.13	1.26
July	11,200	22	874	1.96	2.26
August	2,480	35	356	.800	.92
September	4,740	35	448	1.01	1.13
1915-16					
October	1,350	35	153	.344	.40
November	5,900	26	525	1.18	1.32
December	21,600	48	1,820	4.09	4.72
January	13,500	155	1,890	4.25	4.90
February	7,280	204	1,010	2.27	2.45
March	6,890	173	894	2.01	2.32
April	810	96	210	:472	.53
May	810	42	118	.265	.31
June	4,620	58	552	1.24	1.38
July	1,660	14	133	.299	.34
August	96	18	35.8	.080	.09
September	442	9	66.6	.150	.17
The year	21,600	9	619	1.39	18.93
1916-17					
October	85	9	23.9	0.054	0.06
November	193	22	43.6	.098	.11
December	14,700	40	783	1.76	2.08
January	13,500	85	1,510	3.39	3.91
February	2,780	85	314	.706	.74
March	7,280	214	1,730	3.89	4.48
April	12,600	75	1,090	2.45	2.73
May	22,300	32	1,340	3.01	3.47
June	5,540	32	762	1.71	1.91
July	465	22	84	.189	.22
August	58	9	17.8	.040	.05
September	345	11	46.1	.104	.12
The year	22,300	9	650	1.46	19.83
1917-18					
October	286	1	16.4	0.037	0.04
November	87	2	9.0	.020	.02
December	....	2	154	.346	.40
January	4,390	30	350	.787	.91
February	14,400	155	1,410	3.17	3.30
March	6,020	113	450	1.01	1.16
April	2,010	87	408	.917	1.02
May	5,200	46	423	.951	1.10
June	300	6	82	.184	.21
July	2,980	5	168	.378	.44
August	695	4	63.1	.142	.16
September	488	5	109	.245	.27
The year	14,400	1	296	.665	9.03

Monthly discharge of Eagle Creek at Glencoe, Ky., for the years ending September 30, 1915-1920—Continued.

Month	Maximum	Minimum	Mean.	Per Square Mile	Run-off (depth in inches on drainage area).
1918-19					
October	722	2	55.0	0.124	0.14
November	1,500	14	190	.427	.48
December	5,660	40	950	2.13	2.46
January	8,740	100	803	1.80	2.08
February	532	87	181	.407	.42
March	16,900	214	1,480	3.33	3.84
April	2,580	155	341	.767	.86
May	5,660	155	917	2.06	2.38
June	3,830	51	356	.800	.89
July	3,190	5	166	.373	.43
August	5	3	3.32	.007	.01
September	3	2	2.03	.005	.01
The year	16,900	2	458	1.03	14.00
1919-20					
October	2,780	2	423	0.952	1.10
November	14,700	87	1.700	3.82	4.26
December	13,500	87	1,600	3.60	4.15
January	12,700	63	1,590	3.57	4.12
February	1,920	155	527	1.18	1.27
March	11,500	173	1,720	3.87	4.46
April	17,700	155	1,410	3.17	3.54
May	2,190	126	416	.935	1.08
June	1,500	63	217	.490	.55
July	510	2	57.0	.128	.15
August	2,580	4	689	1.55	1.79
September	2,780	155	427	.960	1.07
The year	17,700	2	897	2.02	27.54

CHAPTER VII.

SALT RIVER AND GREEN RIVER BASIN RECORDS

ROLLING FORK OF SALT RIVER AT NEW HAVEN, KY.

This station was established June 16, 1905. It is located on the only two-span steel railroad bridge in New Haven, Ky., about one-fourth mile from the business section of the city.

The channel is straight for 500 feet above and 800 feet below the station. The right bank is arable above the station and is low, with a small growth of trees. Below the station it is high and steep. This bank is liable to overflow above the station. The left bank is high at the bridge, but just below the bridge it is low and subject to overflow. The bed of the stream is composed of solid rock and will not shift. There is generally one channel, except at very high stages, when there are two. The current is swift.

At low water, measurements are made by wading just below the bridge; at medium water a boat will be used at the ford way 300 feet below the bridge. At extreme high water the steel bridge about 1 mile above will be used. The initial point for sounding will vary as the position of the measurements may vary according to the stage of the river.

A standard chain gage is located on the ties of the downstream side of the downstream guard rail near the middle of the left span of the bridge; length of the chain, 30.09 feet. Station discontinued March 31, 1906. Owing to insufficient discharge measurements, the flow has not been computed.

Discharge measurements of Rolling Fork of Salt River at New Haven, Ky., in 1905.

Date	Made by—	Gage Height	Discharge	Date	Made by—	Gage Height	Discharge
1905 June 16	S. K. Clapp	1.41	137	1905 Oct. 17	M. S. Brennan	1.26	12.5

Daily gage height, in feet, of Rolling Fork of Salt River at New Haven, Ky., for 1905 and 1906.

Day	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1905							
1		1.4	1.2	1.0			7.0
2		1.2	1.2	1.0			4.8
3		1.25	1.1	1.0			6.7
4		1.2	1.1	1.0			8.1
5		1.1	1.1	1.0			3.9
6		1.4	1.0	1.0			2.6
7		1.6	1.3	1.0			2.3
8		1.4	1.1	1.0			2.0
9		1.8	1.1	1.1			1.9
10		4.5	1.1	1.1	0.8		
11		5.2	1.3	1.0			1.7
12		3.7	1.2	1.0			1.6
13		2.3	1.5				1.6
14		2.2	1.5				1.4
15		1.8	1.4				2.4
16			1.4				4.95
17	1.0	1.5	1.4				
18	.9	1.3	1.5				3.3
19	.8	1.3	1.2				2.95
20		1.2	1.3				2.3
21	2.05	4.1	1.2				6.0
22	3.0	3.8	1.2				9.8
23	1.9	2.4	1.2				8.8
24	1.8	3.0	1.2				
25		2.2	1.1	1.0	.6		
26	1.6	1.9	1.1				3.1
27	1.6	1.7	1.1				2.3
28	1.3	1.6	1.0	.9			
29	1.3	1.5	1.0			7.2	
30	1.3	1.4	1.0			9.8	
31		1.3	1.0				

Day	Jan.	Feb.	Mar.	Day	Jan.	Feb.	Mar.	Day	Jan.	Feb.	Mar.
1906				1906				1906			
1		1.9	7.2	11	2.1	1.3	3.3	21		1.3	6.8
2		1.7	7.7	12	2.4	1.3	2.9	22	11.1	1.7	4.5
3	5.8	1.6	13.2	13	3.6	1.4	2.9	23	13.6	2.8	3.7
4	7.2	1.6	16.0	14		1.6	3.5	24	8.3	2.5	4.2
5	5.7	1.7	7.5	15	7.0	1.6	5.3	25	5.3		5.7
6	3.7	1.5	4.7	16	4.7	1.5	8.1	26	3.7	2.4	5.3
7	2.7	1.1	3.9	17	4.5	1.4	5.7	27	3.2	3.7	8.7
8	2.5	1.1	3.5	18	3.5	1.3	4.0	28		7.3	9.0
9	2.4	1.4	3.4	19	3.0	1.4	5.9	29	2.4		10.3
10	2.0	1.2	3.6	20	2.7	1.2	7.2	30	2.1		17.1
								31	2.1		18.2

GREEN RIVER BASIN.

GREEN RIVER AT MUNFORDVILLE, KY.

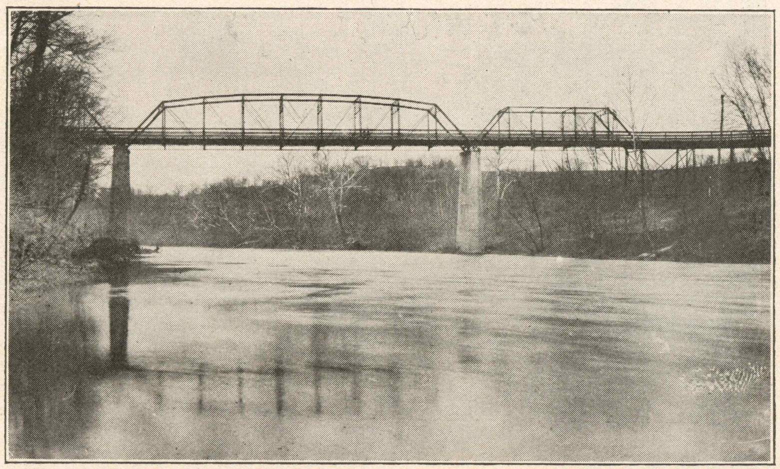
LOCATION.—At toll highway bridge at Munfordville, Hart County. Louisville & Nashville Railroad bridge is about a mile below highway bridge.

DRAINAGE AREA.—1,790 square miles (measured on map of Kentucky compiled by United States Geological Survey, scale 1:500,000).

RECORDS AVAILABLE.—February 27, 1915, to September 30, 1920.

GAGE.—Chain gage attached to upstream handrail of bridge; read by Chester Williams.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge or by wading 100 feet below the bridge.



Green River at Munfordville, Ky., Feb. 26, 1915. Discharge measurements made from this bridge.

CHANNEL AND CONTROL.—The control for low stages is at a riffle used as a ford immediately below the bridge and is believed to be permanent; control at high stages is also believed to be permanent. Discharge relation may be affected to some extent at high stages by differences in the foliage on the brush and trees in the flood plain.

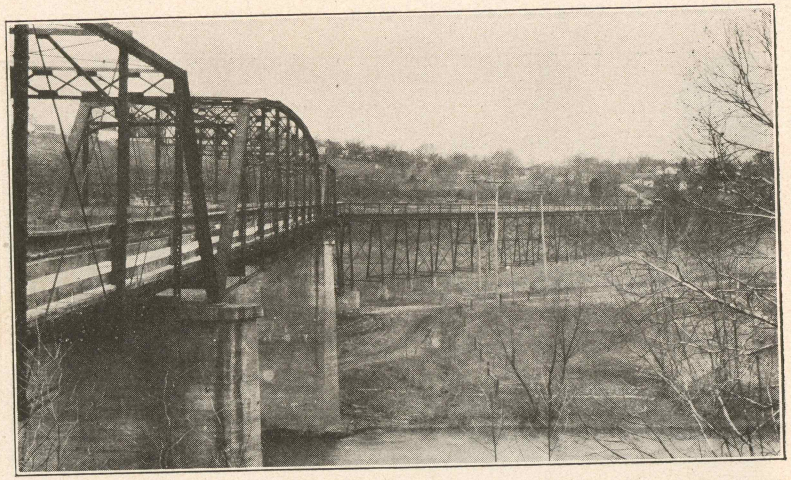
EXTREMES OF DISCHARGE.—1915-1920: Maximum stage recorded, 39.55 feet at 5:30 a. m. January 11, 1920 (discharge 36,300 second-feet); minimum stage, 2.45 feet at 5:30 a. m., September 22, 1919 (discharge, 42 second-feet).

Highest known stage, about 54 feet; date unknown.

ICE.—Ice seldom forms at this station.

ACCURACY.—Stage-discharge relation practically permanent; not affected by ice during average years. Rating curve well defined below and fairly well defined above 1,700 second-feet. Gage read to hundredths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Record good.

COOPERATION.—Station maintained in cooperation with the Kentucky Geological Survey.



Highway bridge at Munfordville, Ky., Feb. 26, 1915, showing wide flood plane on right bank.

Discharge measurements of Green River at Munfordville, Ky., during the period 1915-1920.

Date	Made by—	Gage Height	Dis-charge	Date	Made by—	Gage Height	Dis-charge
		Ft.	Sec.-ft.			Ft.	Sec.-ft.
1915				1917			
Feb. 26	Ellsworth & Sellier	4.02	961	June 26	B. E. Jones	12.77	7,050
Mar. 15	C. E. Ellsworth	4.07	1,010	27	B. E. Jones	8.82	4,560
1916				July 10	B. E. Jones	2.97	179
Apr. 28	A. H. Horton	3.06	1,100	11	B. E. Jones	2.99	179
Sept. 8	B. E. Jones	3.06	271	1918			
1917				Apr. 13	B. L. Hopkins	4.31	1,250
Jan. 24	B. E. Jones	34.65	29,500	June 19	Hopkins & Kidwell	2.99	204
25	B. E. Jones	32.14	26,600				
25	B. F. Jones	29.51	21,800	1920			
26	B. E. Jones	17.49	10,200	June 18	W. R. King	3.34	528
June 26	B. E. Jones	16.07	9,000	Sept. 17	W. R. King	4.88	1,680

Daily gage height, in feet, of Green River at Munfordville, Ky., for the years ending September 30, 1915-1920.

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915								
1	....	3.70	4.34	3.23	6.18	5.41	3.23	3.42
2	....	3.68	4.20	3.23	5.98	6.00	4.20	3.38
3	....	3.49	3.99	3.27	6.55	5.42	5.86	3.36
4	....	3.42	3.93	4.25	5.89	4.96	4.14	3.32
5	....	3.69	3.82	4.45	5.05	6.27	4.08	3.16
6	....	5.57	3.77	3.70	5.23	6.67	3.85	6.90
7	....	7.28	3.74	4.63	5.61	6.54	3.60	8.98
8	....	6.98	3.68	7.24	6.98	5.81	3.43	7.10
9	....	5.70	3.66	5.82	6.95	5.43	3.33	4.92
10	....	5.02	3.62	4.56	6.82	4.79	3.27	4.32
11	....	4.60	3.50	4.20	5.11	8.35	3.27	4.05
12	....	4.34	4.02	3.84	4.93	9.76	5.35	3.80
13	....	4.22	4.44	3.68	5.13	10.70	4.16	3.62
14	....	4.11	4.46	3.60	5.07	11.08	3.73	3.49
15	....	4.06	4.26	3.44	8.05	10.24	4.57	3.40
16	....	4.02	3.89	3.33	14.15	7.94	4.03	3.35
17	....	4.08	3.77	3.30	12.03	5.23	3.98	3.79
18	....	4.47	3.68	3.24	8.12	7.01	4.16	3.35
19	....	4.78	3.66	3.15	10.48	4.99	4.61	3.47
20	....	4.65	3.62	3.24	14.44	4.70	4.47	3.27
21	....	4.64	3.56	3.22	13.82	4.59	6.93	3.23
22	....	4.68	3.57	5.02	18.82	4.17	6.19	3.47
23	....	6.04	3.53	11.43	16.74	4.10	6.19	3.38
24	....	5.18	3.49	18.69	11.28	3.81	4.99	3.25
25	....	5.76	3.46	14.71	7.32	3.62	4.37	3.23
26	....	6.12	3.43	7.68	5.50	3.52	4.01	3.13
27	....	6.00	3.38	7.98	4.85	3.44	3.78	3.15
28	3.77	5.54	3.35	7.54	4.64	3.38	3.66	3.17
29	....	5.10	3.28	7.49	5.22	3.35	3.52	3.09
30	....	4.75	3.28	6.70	6.50	3.28	3.57	3.50
31	....	....	....	7.69	....	3.26	3.54	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	11.53	3.47	4.79	....	10.09	6.24	8.39	4.32	11.70	3.26	3.43	3.12
2	15.92	3.47	4.64	17.62	19.81	7.70	9.30	4.31	6.70	3.30	3.37	3.70
3	17.06	3.41	4.46	19.26	18.01	9.98	8.75	4.14	4.95	3.21	3.34	3.88
4	10.24	3.33	4.42	21.02	20.52	9.80	5.46	7.38	4.29	3.33	3.21	3.47
5	12.37	3.36	4.35	16.78	12.25	8.82	5.30	9.44	4.04	3.60	3.13	3.40
6	16.46	3.35	4.26	12.18	9.25	6.88	5.00	9.21	3.75	3.46	3.15	3.18
7	16.72	3.30	4.14	9.80	8.13	7.90	5.79	6.82	4.44	3.63	3.13	3.09
8	8.56	3.32	4.03	9.50	7.75	10.72	4.99	5.34	4.58	3.24	3.09	3.09
9	5.47	3.38	3.98	15.90	7.89	11.02	6.50	5.27	4.50	3.18	3.01	3.06
10	4.76	3.46	3.91	16.38	7.53	8.83	7.77	4.40	4.54	6.01	3.05	3.02
11	4.36	3.42	3.90	12.62	9.01	7.50	7.18	4.18	3.90	4.78	3.04	3.00
12	4.17	3.54	4.29	11.01	11.01	6.67	6.37	3.95	3.76	4.22	3.24	2.96
13	4.18	4.12	6.12	21.41	9.54	6.07	5.83	3.76	4.62	4.28	3.71	2.92
14	4.03	4.84	7.80	28.08	8.89	5.73	5.45	3.58	4.00	4.08	3.42	2.94
15	3.79	15.98	6.89	31.43	9.90	6.15	5.15	3.66	3.74	3.84	3.29	2.95
16	3.50	21.38	11.73	29.60	9.44	8.08	4.83	3.61	3.82	3.52	7.70	3.26
17	3.66	22.78	28.14	18.76	8.42	8.88	5.21	3.60	4.97	3.58	21.68	3.04
18	3.72	15.50	41.54	11.25	7.87	8.16	5.31	3.56	5.35	4.75	12.53	3.06
19	4.10	19.96	40.66	8.88	6.93	7.55	4.89	3.48	5.20	4.04	6.12	3.02
20	5.21	22.22	38.87	7.24	6.37	6.90	4.67	3.46	4.96	4.07	4.74	2.99
21	5.95	21.86	31.61	6.76	5.86	5.87	4.96	3.44	4.72	5.79	4.06	2.94

Daily gage height, in feet, of Green River at Munfordville, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
22	5.39	13.96	14.95	6.62	5.54	5.61	5.03	3.42	4.08	8.09	3.75	2.98
23	4.65	8.70	9.48	7.62	5.36	5.69	4.67	3.44	3.92	9.57	3.51	2.94
24	4.26	7.08	8.00	13.27	6.60	5.33	4.43	3.44	3.78	4.83	3.40	3.52
25	4.05	6.13	8.62	14.45	9.87	5.08	4.23	3.42	3.68	4.10	3.36	3.01
26	3.99	5.59	12.50	11.39	10.40	4.95	4.05	3.44	3.58	3.91	3.28	2.95
27	3.81	5.49	13.76	9.04	8.70	7.96	4.13	3.44	3.47	3.91	3.27	2.83
28	3.73	5.71	12.10	7.80	7.48	10.35	4.10	3.39	3.41	4.21	3.24	4.27
29	3.65	5.45	16.80	7.09	6.74	14.61	4.22	3.39	3.38	4.20	3.14	8.26
30	4.59	5.09	23.40	7.71	....	12.36	4.26	6.78	3.30	3.88	3.10	4.84
31	3.53	....	22.48	8.98	....	8.64	....	13.35	....	3.55	3.08	....
1916-17												
1	3.85	3.26	3.20	21.00	9.60	19.81	7.00	5.45	3.73	3.34	3.27	3.72
2	3.58	3.24	3.14	8.86	9.60	21.25	15.94	5.20	3.94	3.25	3.18	3.93
3	3.40	3.22	3.14	6.70	9.14	22.41	20.57	4.72	4.47	3.21	3.11	4.03
4	3.24	3.19	3.19	6.00	8.14	23.73	15.30	4.45	4.14	3.19	3.00	3.68
5	3.18	3.34	3.21	11.13	6.39	22.67	12.91	4.69	4.00	3.10	3.03	3.51
6	3.12	3.12	3.42	21.62	6.00	17.43	19.45	4.41	4.06	3.13	2.99	3.46
7	3.09	3.10	3.41	35.41	5.44	13.21	18.60	4.23	4.38	2.89	2.99	4.52
8	3.04	3.40	3.40	31.40	5.28	15.57	15.94	4.03	4.51	3.01	3.38	3.90
9	3.04	3.10	3.43	16.29	5.16	17.86	13.12	3.85	4.94	3.07	5.03	3.55
10	3.06	3.07	3.36	8.75	4.82	16.22	12.37	3.84	9.13	2.95	3.82	3.38
11	3.05	3.10	3.37	7.72	4.51	13.26	10.15	3.79	7.83	2.98	3.72	3.28
12	3.01	3.09	3.38	6.58	4.26	12.23	8.40	3.69	6.43	2.96	3.28	3.17
13	3.20	3.10	3.36	14.76	4.06	26.93	8.01	3.70	5.34	2.94	3.13	3.14
14	2.98	3.10	3.30	5.26	4.12	28.77	7.78	3.68	4.63	2.97	3.30	3.20
15	2.96	3.10	3.26	4.92	4.38	21.41	7.46	3.59	4.17	2.96	3.90	3.11
16	2.94	3.18	3.18	4.56	6.54	14.12	6.97	3.54	3.86	3.04	6.03	3.10
17	3.02	3.04	3.24	4.84	7.50	16.29	6.04	3.52	3.75	3.12	11.36	3.06
18	3.31	3.05	3.21	4.96	7.14	20.51	5.55	3.45	3.54	3.23	7.22	3.28
19	3.42	3.04	3.36	4.78	6.72	21.59	5.21	3.46	3.61	3.17	4.69	3.02
20	5.90	3.04	3.22	5.58	14.28	13.83	5.39	3.40	3.47	3.45	3.98	3.02
21	8.36	3.04	3.28	5.78	17.59	10.01	5.29	3.38	3.43	3.65	3.68	3.03
22	6.82	3.03	4.22	26.22	16.10	10.82	4.55	3.42	3.38	3.90	4.16	3.14
23	5.08	3.03	5.28	33.12	11.51	11.30	4.34	3.53	3.38	3.74	8.84	3.17
24	4.33	3.16	5.54	34.62	11.64	17.40	4.37	3.50	3.34	3.41	10.12	3.13
25	3.96	3.38	5.44	21.20	13.09	21.17	4.31	3.52	3.36	3.66	9.39	3.03
26	3.77	3.37	6.66	15.16	11.84	18.02	4.15	3.47	3.29	3.38	6.11	3.02
27	3.59	3.22	14.42	8.70	9.60	12.88	4.03	3.40	3.29	3.63	4.70	3.00
28	3.53	3.28	17.57	7.52	12.52	11.17	4.07	3.64	3.29	3.22	4.01	3.04
29	3.44	3.26	18.25	7.43	....	9.56	4.57	4.04	3.36	3.45	3.74	3.02
30	3.35	3.21	17.24	8.68	....	8.20	4.96	4.08	3.47	3.38	3.58	3.22
31	3.29	....	11.21	8.40	....	7.21	....	4.03	....	3.20	3.52	....
1917-18												
1	3.36	5.1	3.19	3.9	2.12	5.6	3.75	4.3	3.34	3.24	3.65	3.02
2	3.28	4.3	3.20	4.0	9.9	5.2	4.8	4.0	3.30	3.12	3.55	3.13
3	3.20	4.0	3.24	3.9	8.1	5.2	11.8	3.65	3.65	3.02	3.26	3.08
4	3.11	3.75	3.20	5.0	6.9	5.2	12.8	3.55	4.2	3.04	3.15	3.14
5	3.06	3.65	3.20	3.85	6.1	5.7	9.8	3.8	3.55	3.02	3.14	3.30
6	3.03	3.6	3.18	4.0	5.8	8.2	6.8	3.75	3.49	2.99	3.12	3.6
7	3.00	3.55	3.18	7.2	7.0	9.3	6.0	3.65	3.6	2.87	2.96	3.46
8	2.98	3.39	3.18	10.5	10.5	7.4	5.3	3.5	3.8	2.76	2.94	3.28
9	2.96	3.33	3.16	9.9	13.2	6.9	4.8	3.6	3.45	2.96	2.94	3.20
10	2.96	3.29	3.11	7.1	13.9	5.6	4.3	4.2	3.35	3.10	2.94	3.10
11	2.99	3.27	3.08	5.3	12.7	5.4	4.4	5.7	3.25	3.01	2.94	3.07
12	3.10	3.27	3.09	5.5	9.7	5.3	4.3	5.4	3.07	2.91	2.93	3.00
13	3.19	3.23	3.09	8.4	8.4	4.8	4.1	6.4	3.05	2.85	2.87	2.91
14	3.14	3.21	3.14	5.7	7.7	4.6	4.0	8.6	3.10	2.88	2.87	2.87

Daily gage height, in feet, of Green River at Munfordville, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
15	3.08	3.19	3.11	6.6	7.0	4.4	3.95	11.4	3.07	2.93	2.87	2.87
16	3.09	3.18	3.12	10.6	6.3	4.2	4.3	8.4	3.03	2.90	2.86	2.84
17	3.26	3.17	3.10	11.2	6.0	4.1	4.0	5.6	2.98	2.88	2.90	2.94
18	3.12	3.14	3.10	11.3	5.6	4.4	4.1	4.4	2.98	2.86	2.93	3.01
19	3.04	3.13	3.13	8.7	5.3	4.1	4.4	4.4	2.96	2.86	3.28	2.85
20	3.06	3.13	3.17	6.4	11.9	3.95	5.2	4.8	2.93	2.86	3.6	2.84
21	3.07	3.11	3.24	5.6	18.4	3.95	5.9	5.4	2.93	2.86	3.08	2.79
22	3.95	3.11	3.5	5.0	20.4	3.95	7.3	7.0	2.93	2.86	3.02	2.74
23	3.21	3.11	3.75	4.8	12.5	3.9	6.0	8.7	2.93	2.86	2.97	2.74
24	3.16	3.09	4.1	4.8	8.8	4.1	5.2	5.4	2.93	2.86	2.98	2.74
25	3.14	3.07	4.8	4.7	7.4	4.6	4.9	5.4	2.93	3.14	2.88	2.74
26	3.15	3.07	5.9	4.7	6.5	4.7	5.0	5.2	3.28	3.44	2.88	2.71
27	3.15	3.05	6.3	12.6	6.3	4.5	5.4	4.1	3.65	4.7	2.90	2.74
28	3.19	3.06	5.8	22.2	6.0	4.3	5.2	3.8	3.24	6.5	2.90	2.74
29	3.9	3.14	4.6	30.3	....	4.2	4.7	3.75	3.34	4.7	2.80	2.74
30	4.1	3.16	4.1	32.5	....	3.95	4.5	3.49	3.65	6.7	2.88	2.74
31	4.8	....	4.2	32.5	....	3.85	....	3.39	....	4.7	2.78	....
1918-19												
1	2.74	4.6	3.44	11.2	4.6	7.8	6.8	5.2	6.2	3.65	3.03	2.92
2	2.71	4.3	3.42	25.5	4.2	6.6	5.7	5.2	5.9	3.55	4.5	3.08
3	2.71	4.1	3.28	34.8	4.1	6.4	5.3	5.1	5.6	3.55	3.40	3.02
4	2.71	3.8	3.23	32.9	4.0	5.8	4.7	4.9	5.3	3.37	3.33	2.92
5	2.71	3.55	3.23	21.8	4.0	6.2	4.6	5.2	4.9	3.27	3.17	2.77
6	2.70	3.46	3.23	9.3	3.85	10.8	4.4	5.4	4.4	3.26	3.7	2.75
7	2.72	3.32	3.23	6.6	3.8	13.2	4.3	6.3	3.55	3.42	4.6	3.22
8	2.72	3.22	3.23	6.6	3.75	13.9	4.3	7.6	4.3	3.7	4.6	3.7
9	2.72	3.22	3.23	6.3	3.7	14.8	4.6	19.1	4.4	3.5	4.4	3.46
10	2.70	3.14	3.23	5.8	3.7	15.6	5.6	28.4	4.6	3.33	3.65	3.02
11	2.70	3.10	3.23	5.4	3.65	13.7	9.2	27.4	4.4	3.48	3.46	2.65
12	2.70	3.04	3.75	5.3	3.6	8.1	12.2	23.8	4.5	3.35	3.22	2.58
13	2.71	3.04	3.95	4.9	3.6	6.6	11.8	12.5	3.85	3.18	3.08	2.48
14	2.73	3.04	4.7	4.6	3.65	6.5	8.4	8.0	3.8	3.18	3.06	2.54
15	2.74	3.04	9.0	4.6	3.65	6.2	7.0	7.0	3.8	3.16	3.04	2.59
16	2.74	3.04	9.7	4.6	3.7	8.0	8.6	6.3	3.7	3.16	2.90	2.57
17	2.74	3.04	8.4	4.6	3.7	16.7	8.5	6.8	3.6	3.08	2.89	2.57
18	2.78	6.9	6.2	4.7	3.7	19.3	8.6	7.5	3.55	3.06	2.89	2.57
19	3.7	9.7	5.2	5.6	3.6	15.2	7.1	7.1	3.46	3.06	2.89	2.57
20	3.41	8.2	4.5	5.5	3.65	10.5	6.4	7.5	3.46	3.48	2.89	2.48
21	3.85	4.9	4.4	5.3	4.0	8.3	5.4	6.8	3.4	3.55	2.89	2.46
22	3.42	4.4	6.0	5.1	5.0	7.2	4.8	6.5	3.36	3.6	2.89	2.45
23	3.30	4.0	7.7	7.1	5.8	6.3	4.4	6.5	3.65	3.8	2.89	2.62
24	3.07	3.85	8.3	8.7	5.9	5.7	4.3	7.1	3.75	3.5	2.89	2.88
25	3.26	3.6	8.1	9.7	7.1	5.0	4.2	9.2	3.75	3.16	2.8	3.02
26	3.75	3.55	7.5	9.0	10.9	5.2	4.0	17.1	3.65	2.96	2.69	2.82
27	3.75	3.49	6.5	7.0	11.4	7.4	3.95	17.5	4.8	2.95	2.79	2.64
28	3.70	3.48	5.5	6.1	11.0	11.5	3.9	11.9	3.85	2.94	2.90	2.55
29	4.7	3.7	5.0	5.4	....	9.0	3.9	9.9	3.75	2.90	2.84	2.55
30	4.7	3.45	4.6	5.3	....	7.8	4.6	7.8	3.75	2.88	2.78	2.55
31	4.1	....	5.6	4.7	....	7.7	....	6.4	....	2.88	2.84	....
1919-20												
1	2.55	12.0	16.8	3.35	6.4	7.7	11.6	10.8	6.4	3.02	2.97	3.5
2	2.54	13.6	12.9	3.32	6.8	7.3	16.5	11.2	6.9	2.99	3.44	3.40
3	2.54	25.0	8.3	3.31	8.0	7.1	19.9	10.1	8.6	2.81	3.8	3.31
4	2.54	21.4	7.2	3.44	8.5	9.0	18.4	7.2	11.0	2.75	2.98	3.23
5	2.60	11.6	6.2	3.44	8.9	9.8	18.0	5.9	12.8	2.99	2.93	3.21
6	2.75	6.7	8.2	3.75	9.6	9.6	14.9	5.3	11.8	3.39	3.23	3.35
7	2.74	6.0	10.1	7.5	8.9	8.3	11.9	5.7	10.3	3.65	3.03	3.25

Daily gage height, in feet, of Green River at Munfordville, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1919-20												
8	2.88	5.4	12.3	13.9	7.6	7.5	10.2	8.5	8.8	3.65	4.1	3.19
9	2.78	5.0	22.7	26.8	6.8	6.9	8.6	14.6	7.6	3.49	5.6	3.07
10	2.77	4.8	25.4	34.0	6.6	6.6	7.7	13.2	5.7	3.35	5.1	3.6
11	2.87	4.5	21.8	38.8	6.2	7.6	6.6	10.1	4.8	3.33	4.6	4.4
12	2.88	5.6	19.0	25.9	6.4	7.8	6.3	11.9	4.5	3.21	4.0	9.4
13	5.5	5.2	16.8	17.1	7.1	9.3	6.0	11.6	3.9	3.09	4.4	17.4
14	5.6	4.8	23.0	10.2	6.7	11.9	5.6	9.3	3.55	3.19	12.3	15.3
15	6.0	4.4	26.9	9.7	6.3	10.9	5.2	7.6	3.46	3.7	13.1	9.0
16	6.8	4.1	28.0	8.4	5.7	9.8	5.0	6.1	3.36	3.75	10.4	7.0
17	8.9	4.0	26.9	7.5	5.6	9.6	5.0	6.7	3.42	3.49	8.4	5.3
18	11.6	3.8	22.1	7.6	5.4	10.9	4.9	7.8	3.65	3.34	7.5	4.9
19	9.2	3.6	14.4	7.7	5.2	13.4	4.7	7.6	3.23	3.23	6.1	4.3
20	8.1	3.55	10.0	10.1	7.0	19.8	6.9	7.6	3.22	3.15	4.7	3.55
21	6.4	3.55	7.4	14.3	11.4	26.8	20.8	7.4	3.28	3.12	4.8	3.27
22	4.2	3.55	6.9	23.4	14.5	21.9	23.4	7.6	3.55	3.10	5.8	3.55
23	4.5	3.55	6.5	27.3	21.4	11.1	20.2	7.8	3.40	3.10	5.2	3.42
24	4.4	3.55	5.6	28.9	19.3	8.9	14.3	7.3	3.29	3.04	4.7	3.36
25	4.3	3.55	5.2	26.2	16.3	7.2	9.4	6.5	3.24	2.96	4.4	3.27
26	4.2	16.9	4.6	21.9	11.2	6.2	11.4	6.0	3.20	3.00	4.0	3.27
27	4.2	26.8	4.4	19.3	7.4	5.4	16.9	5.5	3.16	3.02	4.1	3.27
28	3.8	29.2	4.3	15.3	6.3	5.7	13.9	4.4	3.12	2.90	4.6	3.21
29	3.46	27.1	4.2	11.7	6.9	5.5	10.2	4.0	3.06	2.86	4.2	3.5
30	3.38	20.2	3.6	10.1	....	5.2	10.0	4.6	3.02	2.84	3.5	3.42
31	5.0	....	3.45	7.8	....	6.7	....	5.6	....	2.94	3.6	....

Daily discharge, in second feet, of Green River at Munfordville, Ky., for the years ending September 30, 1915-1920

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1915							
1	750	1,200	389	2,620	2,020	389	525
2	750	1,120	389	2,480	2,480	1,120	505
3	600	975	421	2,920	2,020	2,400	490
4	525	938	1,120	2,400	1,720	1,050	460
5	750	825	1,280	1,720	2,700	1,050	335
6	2,180	788	750	1,880	3,000	862	3,150
7	3,450	788	1,420	2,180	2,850	675	4,720
8	3,220	750	3,380	3,220	2,320	562	3,300
9	2,250	712	2,320	3,220	2,020	468	1,650
10	1,720	675	1,420	3,080	1,580	421	1,200
11	1,420	600	1,120	1,800	4,280	421	975
12	1,200	975	862	1,650	5'420	2,020	825
13	1,120	1,280	750	1,800	6,040	1,120	675
14	1,050	1,350	675	1,800	6,360	788	600
15	1,050	1,200	562	3,980	5,640	1,420	525
16	975	900	468	9,000	3,900	975	482
17	1,050	788	445	7,120	1,880	975	825
18	1,350	750	397	4,050	3,220	1,120	482
19	1,580	712	328	5,880	1,720	1,420	562
20	1,420	675	397	9,160	1,500	1,350	421
21	1,420	638	381	8,660	1,420	3,150	389
22	1,500	638	1,720	13,300	1,120	2,620	562

Daily discharge, in second feet, of Green River at Munfordville, Ky., for the years ending September 30, 1915-1920.—Continued

1915							
23	2,480	638	6,620	11,300	1,050	2,620	512
24	1,880	600	13,200	6,530	825	1,720	405
25	2,320	562	9,440	3,450	675	1,280	389
26	2,550	562	3,750	2,100	600	975	312
27	2,480	505	3,980	1,580	562	825	328
28	2,100	482	3,600	1,420	505	712	342
29	1,800	429	3,600	1,880	482	600	282
30	1,580	429	3,000	2,850	429	638	600
31	1,350	....	3,750	....	413	638	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	6,700	562	1,580	14,600	5,560	2,620	4,280	1,200	6,870	413	562	305
2	10,600	562	1,420	12,200	14,300	3,750	4,950	1,200	3,000	445	498	750
3	11,700	525	1,350	13,800	12,600	5,480	4,580	1,050	1,720	373	475	900
4	5,640	468	1,280	15,500	15,000	5,320	2,100	3,520	1,200	468	373	562
5	7,460	490	1,280	11,400	7,300	4,580	1,950	5,020	975	675	312	525
6	11,200	482	1,200	7,300	4,880	3,150	1,720	4,880	788	562	328	350
7	11,300	445	1,050	5,320	4,050	3,900	2,320	3,080	1,280	712	312	282
8	4,420	460	975	5,100	3,820	6,040	1,720	1,950	1,420	397	282	282
9	2,100	505	975	10,600	3,900	6,280	2,850	1,950	1,350	350	222	260
10	1,580	562	900	11,100	3,600	4,580	3,820	1,280	1,350	2,480	252	230
11	1,280	525	900	7,640	4,720	3,600	3,380	1,120	900	1,580	245	215
12	1,120	638	1,200	6,280	6,280	3,000	2,780	938	788	1,120	397	189
13	1,120	1,050	2,550	15,900	5,100	2,550	2,320	788	1,420	1,200	750	163
14	975	1,580	3,820	22,900	4,650	2,250	2,020	675	975	1,050	525	176
15	825	10,700	3,150	26,700	5,400	2,620	1,880	712	788	862	437	182
16	600	15,900	6,870	24,600	5,020	4,050	1,580	675	825	600	3,750	413
17	712	17,300	22,900	13,300	4,280	4,650	1,880	675	1,720	675	16,200	245
18	750	10,200	38,700	6,440	3,900	4,120	1,950	638	2,020	1,580	7,550	260
19	1,050	14,500	37,700	4,650	3,150	3,680	1,650	600	1,880	975	2,550	230
20	1,880	16,700	35,500	3,380	2,780	3,150	1,500	562	1,720	1,050	1,500	208
21	2,480	16,400	26,900	3,080	2,400	2,400	1,720	562	1,500	2,320	1,050	176
22	2,020	8,820	9,720	2,920	2,100	2,180	1,720	525	1,050	4,050	788	202
23	1,420	4,500	5,100	3,680	2,020	2,250	1,500	562	900	5,180	600	176
24	1,200	3,300	3,980	8,230	2,920	1,950	1,280	562	825	1,580	525	600
25	975	2,550	4,420	9,160	5,400	1,800	1,120	525	750	1,050	490	222
26	975	2,180	7,550	6,620	5,800	1,720	975	562	675	900	429	182
27	825	2,100	8,660	4,720	4,500	3,980	1,050	562	562	900	421	118
28	788	2,250	7,210	3,820	3,600	5,800	1,050	512	525	1,120	397	1,200
29	712	2,020	11,400	3,300	3,000	9,340	1,120	512	505	1,120	320	4,200
30	1,420	1,800	17,900	3,750	....	7,460	1,200	3,080	445	900	290	1,580
31	638	....	17,000	4,720	....	4,420	....	8,320	....	638	275	....
1916-17												
1	862	413	365	15,500	5,180	14,300	3,220	2,020	788	475	421	750
2	675	397	320	4,650	5,180	15,700	10,600	1,880	938	405	350	938
3	520	381	320	3,000	4,800	16,900	15,100	1,500	1,350	373	298	975
4	397	358	358	2,480	4,050	18,300	10,000	1,280	1,050	358	215	750
5	350	475	373	6,360	2,780	17,200	7,890	1,500	1,420	290	238	600
6	305	305	520	16,100	2,480	12,000	13,900	1,350	1,050	312	208	560
7	282	290	520	31,300	2,020	8,140	13,200	1,120	1,280	146	208	1,350
8	245	520	520	26,700	1,950	10,300	10,600	975	1,120	222	505	900
9	245	290	560	11,000	1,880	12,500	8,060	862	1,650	268	1,720	638
10	260	268	490	4,580	1,580	10,900	7,460	862	4,800	182	825	505
11	252	290	498	3,750	1,350	8,230	5,640	825	3,820	202	750	429

NOTE.—Jan. 1, 1916, no gage height reported. Discharge interpolated.

Daily discharge, in second feet, of Green River at Munfordville, Ky., for the years ending September 30, 1915-1920.—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
12	222	282	505	2,920	1,200	7,290	4,280	750	2,780	189	429	342
13	365	290	490	9,540	1,050	21,600	3,980	750	1,950	176	312	320
14	202	290	445	1,950	1,050	23,700	3,820	750	1,420	196	445	365
15	189	290	413	1,650	1,280	15,900	3,600	675	1,120	189	900	298
16	176	350	350	1,420	2,850	8,910	3,220	638	862	245	2,480	290
17	230	245	397	1,580	3,600	11,000	2,480	600	788	305	6,620	260
18	452	252	373	1,720	3,300	15,000	2,180	560	638	389	3,380	429
19	520	245	490	1,580	3,000	16,100	1,880	560	675	342	1,500	230
20	2,400	245	381	2,180	9,080	8,660	2,020	520	560	560	975	230
21	4,280	245	429	2,320	12,200	5,480	1,950	505	560	712	750	238
22	3,080	238	1,120	20,900	10,800	6,120	1,420	520	505	900	1,120	320
23	1,800	238	1,950	28,600	6,700	6,530	1,200	638	505	788	4,480	342
24	1,200	335	2,100	30,300	6,780	12,000	1,280	600	475	520	5,560	312
25	938	505	2,020	26,400	8,060	15,700	1,200	600	490	712	5,020	238
26	788	498	3,000	9,920	6,960	12,600	1,120	560	437	505	2,550	230
27	675	381	9,160	4,500	5,180	7,890	975	520	437	712	1,500	230
28	638	429	12,200	3,600	7,550	6,440	1,050	712	437	381	975	245
29	560	413	12,800	3,520	....	5,180	1,420	975	490	560	788	230
30	482	373	11,800	4,500	....	4,120	1,720	1,050	560	505	675	381
31	437	....	6,440	4,280	....	3,380	....	975	....	365	600	....
1917-18												
1	490	1,800	358	800	15,700	2,180	788	1,200	475	397	712	230
2	429	1,200	365	700	5,400	1,880	1,580	975	445	305	638	312
3	365	975	397	700	4,050	1,880	6,960	712	712	230	413	275
4	298	788	365	700	3,150	1,880	7,800	638	1,120	245	328	320
5	260	712	365	700	2,550	2,250	5,320	825	638	230	320	445
6	238	675	350	800	2,320	4,120	3,080	788	592	208	305	675
7	215	638	350	3,380	3,220	4,950	2,480	712	675	136	189	568
8	202	512	350	5,880	5,880	3,520	1,950	600	825	95	176	429
9	189	468	335	5,400	8,140	3,150	1,580	675	560	189	176	365
10	189	437	298	3,300	8,740	2,180	1,200	1,120	482	290	176	290
11	208	421	275	1,950	7,720	2,020	1,280	2,250	405	222	176	268
12	290	421	270	1,900	5,250	1,950	1,200	2,020	268	156	170	215
13	358	389	270	1,900	4,280	1,580	1,050	2,780	252	128	136	156
14	320	373	270	2,250	3,750	1,420	975	4,420	290	141	136	136
15	275	358	270	2,920	3,220	1,280	938	6,620	268	170	136	136
16	282	350	260	5,960	2,700	1,120	1,200	4,280	238	150	132	123
17	413	342	260	6,440	2,480	1,050	975	2,180	202	141	150	176
18	305	320	260	6,530	2,180	1,280	1,050	1,280	202	132	170	222
19	245	312	270	4,500	1,950	1,050	1,280	1,280	189	132	429	128
20	260	312	280	2,780	7,040	938	1,880	1,580	170	132	675	123
21	268	298	300	2,180	13,000	938	2,400	2,020	170	132	275	102
22	938	298	500	1,720	14,900	938	3,450	3,220	170	132	230	90
23	373	298	700	1,580	7,550	900	2,480	4,500	170	132	196	90
24	335	282	1,050	1,580	4,580	1,050	1,880	2,020	170	132	202	90
25	320	268	1,580	1,500	3,520	1,420	1,650	2,020	170	320	141	90
26	328	268	2,400	1,500	2,850	1,500	1,720	1,880	429	552	141	82
27	328	252	2,700	7,640	2,700	1,350	2,020	1,050	712	1,500	150	90
28	358	260	2,320	16,700	2,480	1,200	1,880	825	397	2,850	150	90
29	900	320	1,420	25,400	....	1,120	1,500	788	475	1,500	105	90
30	1,050	335	1,050	27,900	....	938	1,350	592	712	3,000	141	90
31	1,580	....	900	27,900	....	862	....	512	....	1,500	100	....

Daily discharge, in second feet, of Green River at Munfordville, Ky., for the years ending September 30, 1915-1920.—Continued

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1918-19												
1	90	1,420	552	6,440	1,420	3,820	3,080	1,880	2,620	712	238	163
2	82	1,200	536	20,200	1,120	2,920	2,250	1,880	2,400	638	1,350	275
3	82	1,050	429	30,600	1,050	2,780	1,950	1,800	2,180	638	520	230
4	82	825	389	28,400	975	2,320	1,500	1,650	1,950	498	468	163
5	82	638	389	16,300	975	2,620	1,420	1,880	1,650	421	342	98
6	80	568	389	4,950	862	6,120	1,280	2,020	1,280	413	750	92
7	85	460	389	2,920	825	8,140	1,200	2,700	638	536	1,420	381
8	85	381	389	2,920	788	8,740	1,200	3,680	1,200	750	1,420	750
9	85	381	389	2,700	750	9,540	1,420	13,600	1,280	600	1,280	568
10	80	320	389	2,320	750	10,300	2,180	23,300	1,420	468	712	230
11	80	290	389	2,020	712	8,570	4,880	22,200	1,280	584	568	72
12	80	245	788	1,950	675	4,050	7,300	18,400	1,350	482	381	62
13	82	245	938	1,650	675	2,920	6,960	7,550	862	350	275	47
14	88	245	1,500	1,420	712	2,850	4,280	3,980	825	350	260	56
15	90	245	4,720	1,420	712	2,620	3,220	3,220	825	335	245	64
16	90	245	5,250	1,420	750	3,980	4,420	2,700	750	335	150	60
17	90	245	4,280	1,420	750	11,300	4,350	3,080	675	275	146	60
18	100	3,150	2.620	1.500	750	13,800	4,420	3,600	638	260	146	60
19	750	5,250	1,880	2,180	675	9,920	3,300	3,300	568	260	146	60
20	528	4,120	1,350	2,100	712	5,880	2,780	3,600	568	584	146	47
21	862	1,650	1,280	1,950	975	4,200	2,020	3,080	520	638	146	44
22	536	1,280	2,480	1,800	1,720	3,380	1,580	2,850	490	675	146	42
23	445	975	3,750	3,300	2,320	2,700	1,280	2,850	712	825	146	68
24	268	862	4,200	4,500	2,400	2,250	1,200	3,300	788	600	146	141
25	413	675	4,050	5,250	3,300	1,720	1,120	4,880	788	335	105	230
26	788	638	3,600	4,720	6,200	1,880	975	11,700	712	189	78	114
27	788	592	2,850	3,220	6,620	3,520	938	12,100	1,580	182	102	71
28	750	584	2,100	2,550	6,280	6,700	900	7,040	862	176	150	58
29	1,500	750	1,720	2,020	....	4,720	900	5,400	788	150	123	58
30	1,500	560	1,420	1,950	....	3,820	1,420	3,820	788	141	100	58
31	1,050	....	2,180	1,500	....	3,750	....	2,780	....	141	123	....
1919-20												
1	58	7,120	11,400	482	2,780	3,750	6,780	6,120	2,780	230	196	600
2	56	8,480	7,890	460	3,080	3,450	11,200	6,440	3,150	208	552	520
3	56	19,600	4,200	452	3,980	3,300	14,400	5,560	4,420	110	825	452
4	56	15,900	3,380	552	4,350	4,720	13,000	3,380	6,280	92	202	389
5	65	6,780	2,620	552	4,650	5,320	12,600	2,400	7,800	208	170	373
6	92	3,000	4,120	788	5,180	5,180	9,630	1,950	6,960	512	389	482
7	90	2,480	5,560	3,600	4,650	4,200	7,040	2,250	5,720	712	238	405
8	141	2,020	7,380	8,740	3,680	3,600	5,640	4,350	4,580	712	1,050	358
9	100	1,720	17,200	21,500	3,080	3,150	4,420	9,340	3,680	592	2,180	268
10	98	1,580	20,000	29,600	2,920	2,920	3,750	8,140	2,250	482	1,800	675
11	136	1,350	16,300	35,400	2,620	3,680	2,920	5,560	1,580	468	1,420	1,280
12	141	2,180	13,500	20,600	2,780	3,820	2,700	7,040	1,350	373	975	5,020
13	2,100	1,880	11,400	11,700	3,300	4,950	2,480	6,780	900	282	1,280	12,000
14	2,180	1,580	17,500	5,640	3,000	7,040	2,180	4,950	638	358	7,380	10,000
15	2,480	1,280	21,600	5,250	2,700	6,200	1,880	3,680	568	750	8,060	4,720
16	3,080	1,050	22,800	4,280	2,250	5,320	1,720	2,550	490	788	5,800	3,220
17	4,650	975	21,600	3,600	2,180	5,180	1,720	3,000	536	592	4,280	1,950
18	6,780	825	16,600	3,680	2.020	6,200	1,650	3,820	712	475	3,600	1,650
19	4,880	675	9,160	3,750	1,880	8,520	1,500	3,680	389	389	2,550	1,200
20	4,050	638	5,480	5,560	3,220	14,300	3,150	3,680	381	328	1,500	638
21	2,780	638	3,520	9,080	6,620	21,500	15,300	3,520	429	305	1,580	421
22	1,120	638	3,150	17,900	9,250	16,400	17,900	3,680	638	290	2,320	638
23	1,350	638	2,850	22,800	15,900	6,360	14,700	3,820	520	290	1,880	536
24	1,280	638	2,180	23,800	13,800	4,650	9,080	3,450	437	245	1,500	490
25	1,200	638	1,880	20,900	11,000	3,380	5,020	2,850	397	189	1,280	421
26	1,120	11,500	1,420	16,400	6,440	2,620	6,620	2,480	365	215	975	421
27	1,120	21,500	1,280	13,800	3,520	2,020	11,500	2,100	335	230	1,050	421
28	825	24,100	1,200	10,000	2,700	2,250	8,740	1,280	305	150	1,420	373
29	568	21,800	1,120	6,870	3,150	2,100	5,640	975	260	132	1,120	600
30	505	14,700	675	5,560	....	1,880	5,480	1,420	230	123	600	536
31	1,720	....	560	3,820	....	3,000	....	2,180	....	176	675	....

Monthly discharge of Green River at Munfordville, Ky., for the years ending September 30, 1915-1920.

(Drainage area, 1,790 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1915					
March	3,450	525	1,610	0.899	1.04
April	1,350	429	783	.432	.49
May	13,200	328	2,320	1.30	1.50
June	13,300	1,420	4,170	2.33	2.60
July	6,360	420	2,280	1.27	1.46
August	3,150	389	1,170	.654	.75
September	4,720	282	894	.499	.56
1915-16					
October	11,700	600	3,110	1.74	2.01
November	17,300	445	4,670	2.61	2.91
December	38,700	900	9,200	5.14	5.93
January	26,700	2,920	9,440	5.27	6.08
February	15,000	2,020	5,240	2.93	3.16
March	9,340	1,720	3,960	2.21	2.55
April	4,950	975	2,130	1.19	1.33
May	8,320	518	1,570	.877	1.01
June	6,870	445	1,360	.760	.85
July	5,180	350	1,200	.670	.77
August	16,200	222	1,390	.777	.90
September	4,200	118	513	.287	.32
The year	38,700	118	3,660	2.04	27.82
1916-17					
October	4,280	176	775	0.433	0.50
November	520	238	338	.189	.21
December	12,800	320	2,310	1.29	1.49
January	31,300	1,420	9,320	5.21	6.01
February	12,200	1,050	4,420	2.47	2.57
March	23,700	3,380	11,600	6.49	7.48
April	15,100	975	4,880	2.73	3.05
May	2,020	505	891	.498	.57
June	4,800	437	1,160	.649	.72
July	900	146	403	.225	.26
August	6,620	208	1,510	.844	.97
September	1,350	230	464	.259	.29
The year	31,300	146	3,180	1.78	24.12
1917-18					
October	1,580	189	407	0.227	0.26
November	1,800	252	489	.273	.30
December	2,700	260	682	.381	.44
January	27,900	700	5,650	3.16	3.64
February	15,700	1,950	5,400	3.14	3.14
March	4,950	862	1,740	1.12	1.12
April	7,800	788	2,160	1.35	1.35
May	6,620	512	1,820	1.18	1.18
June	1,120	170	419	.26	.26
July	3,000	95	503	.32	.32
August	712	100	244	.16	.16
September	675	82	217	.14	.14
The year	27,900	82	1,620	12.31	12.31

Monthly discharge of Green River at Munfordville, Ky., for the years ending September 30, 1915-1920.—Continued.

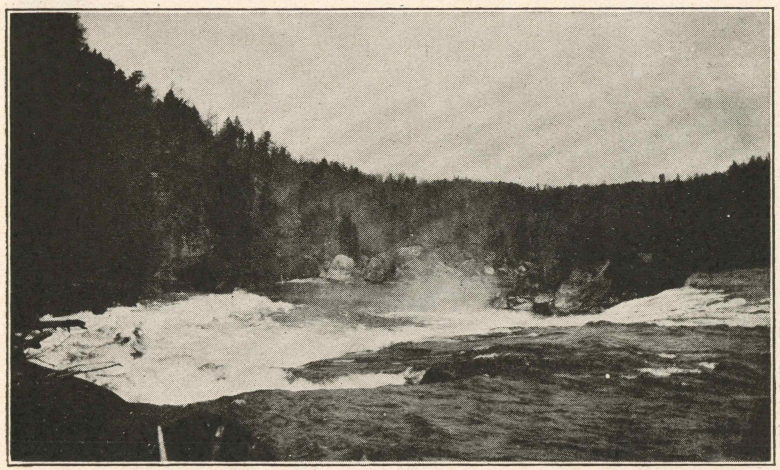
Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1918-19					
October	1,500	80	378	.211	.24
November	5,250	245	1,000	.559	.62
December	5,250	389	1,860	1.04	1.20
January	30,600	1,420	5,410	3.02	3.48
February	6,620	675	1,660	.927	.97
March	13,800	1,720	5,220	2.92	3.37
April	7,300	900	2,520	1.41	1.57
May	23,300	1,650	5,990	3.35	3.86
June	2,620	490	1,100	.615	.69
July	825	141	437	.244	.28
August	1,420	78	398	.222	.26
September	750	42	147	.082	.09
The year	30,600	42	2,190	1.22	16.63
1919-20					
October	6,780	56	1,450	.810	.93
November	24,100	638	5,930	3.31	3.69
December	22,800	560	8,370	4.68	5.40
January	35,400	452	10,200	5.70	6.57
February	15,900	1,880	4,710	2.63	2.84
March	21,500	1,880	5,510	3.08	3.55
April	17,900	1,500	7,010	3.92	4.37
May	9,340	975	3,950	2.21	2.55
June	7,800	230	1,970	1.10	1.23
July	788	92	355	.198	.23
August	8,060	170	1,900	1.06	1.22
September	12,000	268	1,700	.950	1.06
The year	35,400	56	4,420	2.47	33.64

CHAPTER VIII.

CUMBERLAND RIVER BASIN RECORDS

CUMBERLAND RIVER AT CUMBERLAND FALLS, KENTUCKY.

LOCATION.—At Cumberland Falls postoffice, Whitley County, about 400 feet above falls, 13 miles from Parkers Lake



Rapids on Cumberland River just above Cumberland Falls, Ky., March 28, 1915.

postoffice and Cumberland Falls railroad station, McCreary County, on Queen & Crescent Route.

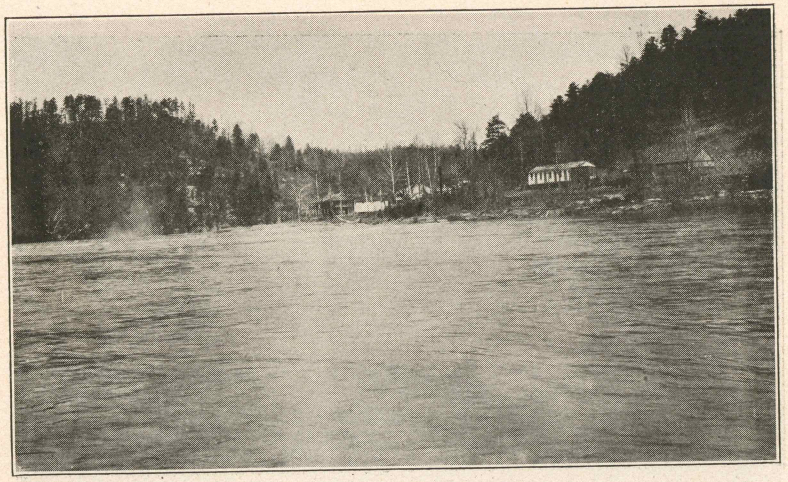
DRAINAGE AREA.—2,040 square miles (measured on maps of Kentucky and Tennessee prepared by the United States Geological Survey on scale of 1:500,000.

RECORDS AVAILABLE.—August 15, 1907, to December 10, 1911; April 1, 1915, to September 30, 1920.

GAGE.—Staff, inclined and vertical, on right bank, 400 feet above brink of falls, established April 3, 1915, and read by Alice Brunson. As inclined and vertical staff gage was established in August, 1907, by Viele, Blackwell & Buck, on right bank about 300 feet above site of Survey gage; this gage was read twice daily

until March 18, 1911, and once daily from March 19 to December 10, 1911, by H. C. Brunson; nothing is left of it except the bench mark to which it was referred. A staff gage reading to about 6 feet was installed in 1914 on a large boulder in the river near the left bank, practically opposite the site of the gage established in August, 1907; no readings of this gage are available.

Discharge Measurements.—Made from cable about 600



Brunson Inn at Cumberland Falls, Ky., March 28, 1915.

feet above gage. A reference gage on left bank near cable is used to determine depths when soundings can not be made.

Channel and Control.—Solid rock; permanent. At high stages the edge of the falls serve as control, there being a vertical drop of about 68 feet at the falls at low water.

Extremes of Discharge.—Maximum stage recorded during period of record, 12.2 feet January 28, 1918, discharge 57,500 second-feet; minimum, 1.04 feet on September 29, 1919 (discharge, 41 second-feet.

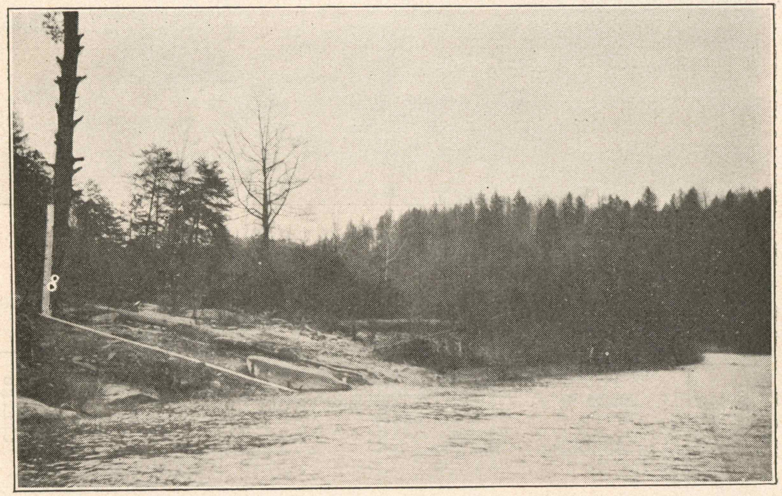
Highest known stage 12.2 feet January 28, 1918 (discharge 57,500 second-feet; lowest stage, according to Wm. Taylor, a local resident in September, 1916, occurred in 1902, when entire flow of river was confined in a channel 7 feet wide, 1 foot deep,

flowing fast; under these conditions the discharge would probably be about 30 second-feet.

Ice.—Stage-discharge relation not affected by ice.

Regulation.—Low-water flow may be affected to a small extent by operation of power plant at Williamsburg, about 25 miles above the station.

Accuracy.—Stage-discharge relation permanent. Rating



U. S. G. S. gage on Cumberland River at Cumberland Falls, April 3, 1915.

curve well defined. Gage read to hundredths twice daily. Daily discharge from August 15, 1907, to December 10, 1911, is obtained from gage readings of the gage established by Viele, Blackwell & Buck. The rating curve is based on discharge measurements during 1907 and the relation between the old gage and the present gage as determined in 1916 and 1917 by the Geological Survey. It is considered fairly well defined. Daily discharge ascertained by applying mean daily gage height or daily gage height to rating tables except as noted. Records for 1907 to 1911 are considered good; results since 1915 are excellent.

Cooperation.—Station maintained in cooperation with the Kentucky Geological Survey.

A-frame on right bank of Cumberland River at Cumberland Falls, Ky., April 3, 1915. Discharge measurements are made from this cable.

Discharge measurements of Cumberland River at Cumberland Falls, Ky., during the period 1907-1920.

Date	Made by—	Gage Height	Dis-charge	Date	Made by—	Gage Height	Dis-charge
1907		Ft.	Sec.-ft.	1916		Ft.	Sec.-ft.
Aug. 30	Wallace	1.05	361	Sept. 13	B. E. Jones	1.50	280
Sept. 2	Gay & Stabler	.90	189	Sept. 14	B. E. Jones	1.47	244
5	Benedict & Wallace	2.13	2,050	1917 Jan. 7	B. E. Jones	8.85	34,100
				8	B. E. Jones	8.25	29,700
6	Benedict & Wallace	1.97	1,810	Mar. 14	L. M. Sellier	5.82	14,200
7	Gay & Benedict	1.61	1,160	15	L. M. Sellier	5.03	10,700
				15	L. M. Sellier	4.82	10,700
9	Gay, Benedict & Stabler	2.40	2,710	July 13	B. E. Jones	1.23	80
				14	B. E. Jones	1.22	78
1915 Apr. 3	Ellsworth & Stabler	2.48	1,870	1918 June 13	Hopkins & Kidwell	1.50	320
1916 Apr. 23	A. H. Horton	2.33	1,500	1920 May 14	W. R. King	2.41	1,640
				1921			

Daily gage height, in feet, of Cumberland River at Cumberland Falls, Ky., for years ending Sept. 30, 1907-1911 and 1915-1920.

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1907			1907			1907		
1	......	0.91	11	......	3.75	21	1.65	1.37
2	......	.9	12	......	5.05	22	1.65	1.94
3	......	1.3	13	......	3.83	23	1.6	3.48
4	......	2.12	14	......	2.93	24	2.6	3.2
5	......	2.15	15	0.9	2.10	25	2.5	2.5
6	......	1.95	16	.89	1.72	26	1.85	2.13
7	......	1.61	17	.94	1.52	27	1.9	1.75
8	......	1.48	18	1.0	1.36	28	1.9	1.52
9	......	2.48	19	1.15	1.28	29	1.65	1.35
10	......	2.68	20	1.65	1.19	30	1.08	1.24
						31	1.0	......

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1907-8												
1	1.16	0.85	2.01	5.10	3.50	3.95	5.15	2.84	1.52	0.90	1.02	0.82
2	1.11	.98	1.84	3.70	4.55	......	......	2.72	1.45	.93	1.02	.79
3	1.06	1.08	1.74	3.02	4.28	......	......	2.72	1.50	.92	.97	.76
4	1.05	2.44	1.66	3.02	3.40	......	......	2.78	1.72	.90	.96	.72
5	1.05	2.30	1.62	4.52	3.22	4.15	5.32	2.90	1.65	.90	.95	.78
6	1.18	1.89	1.54	5.20	3.82	3.85	3.80	3.82	1.52	.92	.94	1.68
7	1.45	1.68	1.46	4.52	5.32	4.32	3.40	4.12	1.47	1.42	.93	2.65
8	1.72	1.54	1.38	3.78	4.80	4.00	3.08	4.20	1.42	2.02	.92	2.32
9	2.12	1.82	1.29	3.10	4.10	3.70	2.75	4.18	1.40	2.55	.90	1.80
10	2.35	3.45	1.30	2.70	3.58	3.30	2.58	3.68	1.32	2.16	.88	1.55
11	2.10	5.22	1.30	2.45	......	3.45	2.55	3.18	1.20	1.82	1.39	1.35
12	1.76	5.25	1.38	3.12	......	3.90	2.58	2.85	1.08	1.60	1.28	1.18
13	1.55	3.40	1.44	3.78	4.85	3.65	2.62	2.60	1.01	1.42	1.18	1.02
14	1.38	2.65	1.46	4.10	3.95	4.65	2.62	2.35	.97	1.30	1.08	.88
15	1.26	2.45	1.53	3.62	......	4.08	2.65	2.89	.93	1.28	1.04	.82
16	1.18	2.20	1.70	3.22	......	3.44	3.32	2.85	.89	1.45	1.00	.77
17	1.11	1.92	1.82	3.62	......	3.35	3.42	2.55	.86	2.25	.96	.74
18	1.06	1.95	1.95	3.90	4.05	4.65	3.10	2.28	.82	2.08	.94	.72
19	1.01	2.20	2.02	3.58	3.30	......	2.80	1.95	.80	1.52	.90	.70
20	.96	2.55	1.92	2.92	3.05	......	2.72	2.05	.78	3.15	.84	.68
21	.94	2.66	1.86	2.68	2.80	5.00	2.58	2.02	.76	2.52	.86	.68
22	.90	2.68	1.92	2.40	2.55	4.15	2.42	1.92	.74	1.85	.91	.66
23	.89	3.22	1.95	2.28	2.42	3.75	2.20	1.82	.72	1.68	.92	.66
24	.89	5.08	1.91	2.18	2.35	3.52	2.09	1.72	.70	1.56	.90	.64
25	.85	5.95	2.75	2.08	2.28	3.35	3.50	1.62	.74	1.36	.88	.62
26	.84	4.78	2.75	2.02	2.20	3.22	......	1.52	1.20	1.21	.86	.60
27	.81	3.32	2.55	2.12	2.40	2.95	......	1.50	1.32	1.08	.94	.60
28	.80	2.75	2.42	2.20	3.10	2.75	5.00	1.50	1.22	1.01	.94	.60
29	.80	2.48	2.32	2.15	3.12	2.75	3.80	1.50	1.10	.97	.90	.61
30	.80	2.16	4.10	2.12	......	3.00	3.10	1.58	.92	.94	.88	.59
31	.84	......	6.00	2.32	......	3.55	......	1.62	......	.96	.83	......
1908-9												
1	......	.66	.86	2.60	2.05	3.30	4.55	4.75	1.45	3.30	1.10	.80
2	.59	.68	.90	2.57	1.92	2.92	3.95	......	1.52	3.95	1.42	.80
3	.58	.70	1.02	2.52	1.89	2.68	3.18	5.20	1.70	3.66	1.92	.79
4	.58	.70	1.38	2.50	1.86	2.52	2.55	3.98	2.22	3.02	2.05	.78
5	.58	.68	1.48	2.58	1.95	2.38	2.38	3.58	2.85	2.50	2.29	.78
6	.58	.67	1.48	2.75	3.05	2.68	2.32	3.28	3.05	2.09	2.16	.76
7	.58	.66	1.58	2.80	4.35	3.75	2.88	2.94	2.68	2.85	1.81	.76
8	.60	.65	1.68	2.80	4.48	5.00	4.20	2.59	2.50	3.95	1.46	.75
9	.69	.65	2.26	2.73	3.92	......	4.10	2.28	2.22	5.12	1.16	.75

Daily gage height, in feet, of Cumberland River at Cumberland Falls, Ky., for years ending Sept. 30, 1907-1911 and 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1908-9												
10	.69	.69	2.25	2.64	4.55	.....	3.70	2.10	2.12	4.85	1.10	.76
11	.68	.95	1.95	2.58	.....	.....	3.38	2.28	2.82	3.75	1.12	.79
12	.68	.91	1.85	2.50	5.50	5.50	2.96	2.45	3.88	3.45	1.21	.78
13	.68	1.25	3.06	2.58	4.15	5.45	2.61	2.55	4.05	3.80	1.29	.80
14	.69	1.42	2.80	3.55	3.78	5.26	2.48	2.36	3.85	.....	1.31	.84
15	.64	1.32	2.45	5.25	3.82	5.08	2.41	2.14	4.14	5.48	1.34	.88
16	.60	1.18	2.10	.....	5.20	4.25	2.52	1.95	4.40	4.82	2.40	.92
17	.60	1.08	2.00	.....	.....	3.65	3.02	1.82	4.35	4.20	.....	.94
18	.60	.98	1.96	.....	.....	3.21	3.55	1.71	4.06	3.65	4.47	.95
19	.61	.92	1.92	5.28	4.92	2.80	4.35	1.55	3.69	3.14	2.80	.91
20	.60	.90	1.84	3.85	3.88	2.90	5.08	.....	3.30	2.58	2.31	.88
21	.60	.88	1.74	2.90	3.92	3.75	.....	.....	2.90	2.10	1.85	.86
22	.59	.88	1.72	2.63	4.62	3.98	.....	.....	2.32	1.82	1.49	.84
23	.58	.86	2.28	2.51	5.32	3.85	5.28	.....	2.00	1.54	1.17	.84
24	.58	.86	3.90	2.38	.....	3.81	4.72	.....	2.25	1.26	1.08	.83
25	.58	.85	3.90	2.28	.....	.....	4.22	.....	2.48	1.08	1.02	.82
26	.58	.84	3.60	2.18	.....	.....	3.68	.....	2.92	1.03	.98	.81
27	.58	.84	3.30	2.08	5.00	.....	3.66	.....	4.02	1.00	.92	.80
28	.59	.82	2.78	2.08	3.98	5.80	3.16	.....	4.15	.98	.89	.79
29	.60	.82	2.50	2.24	.....	5.62	2.75	.....	3.66	.96	.88	.78
30	.62	.80	2.52	2.20	.....	5.10	2.70	.....	2.95	.94	.84	.77
31	.64	.....	2.58	2.14	.....	.....	.....	.....	.....	.91	.82	.....
1909-10												
1	0.77	0.82	0.96	1.20	2.42	3.02	1.36	3.80	2.95	1.47	2.71	0.86
2	.76	.80	1.02	1.19	2.34	4.30	1.33	3.05	2.91	1.48	2.46	1.00
3	.75	.79	1.15	1.18	2.23	4.12	1.36	2.78	2.83	1.58	2.12	1.18
4	.74	.78	1.29	1.18	2.14	3.65	1.45	2.69	2.74	1.61	2.38	1.48
5	.74	.78	1.47	1.33	2.08	3.36	1.54	2.60	2.62	1.68	2.80	2.58
6	.72	.76	1.58	2.30	1.98	3.12	1.53	2.75	2.54	1.95	3.05	2.50
7	.72	.76	1.66	4.45	1.89	2.84	1.48	2.96	2.48	2.22	3.22	2.50
8	.70	.76	1.71	.....	1.80	2.54	1.42	3.10	2.41	2.22	3.58	2.72
9	.70	.78	1.76	4.75	1.72	2.32	1.37	3.52	2.38	3.95	3.50	2.92
10	.71	.80	1.81	4.10	1.66	2.16	1.34	4.40	2.36	3.75	3.10	3.78
11	.72	.80	1.81	3.65	1.70	2.04	1.32	5.08	3.35	3.55	2.82	3.58
12	.74	.79	1.74	3.32	1.84	1.99	1.38	5.52	4.16	3.42	2.66	3.44
13	.76	.78	1.70	2.97	1.98	1.97	1.50	5.36	3.85	3.28	2.45	3.32
14	.79	.78	1.62	2.65	2.10	1.95	1.68	4.85	3.66	3.16	2.24	3.18
15	.82	.76	1.58	2.40	2.22	1.92	1.80	4.19	3.51	3.12	1.98	2.90
16	.84	.76	1.54	2.34	2.36	1.89	1.88	3.68	3.35	3.12	1.76	3.58
17	.88	.78	1.50	2.55	2.72	1.86	2.60	3.15	3.14	3.72	1.58	2.36
18	.91	.82	1.46	3.00	.....	1.82	3.90	2.76	2.90	4.20	1.46	2.22
19	.94	.94	1.44	3.75	.....	1.79	4.15	2.56	2.51	4.12	1.32	2.02
20	.94	1.17	1.40	4.90	5.40	1.76	4.08	2.46	2.18	3.72	1.24	1.84
21	.93	1.24	1.36	5.28	4.95	1.72	3.88	2.44	1.95	3.41	1.22	.....
22	.92	1.21	1.34	4.78	4.52	1.68	3.82	2.58	1.85	3.15	1.18	.....
23	.91	1.18	1.33	4.12	3.99	1.64	4.02	2.69	1.71	2.92	1.16	.....
24	.90	1.21	1.32	3.70	3.76	1.59	4.28	3.05	1.85	2.68	1.13	.....
25	.90	1.24	1.30	3.60	3.46	1.55	4.60	4.70	1.64	2.39	1.09	.....
26	.88	1.16	1.28	3.43	3.25	1.51	4.65	5.40	1.66	2.00	1.06	.....
27	.87	1.06	1.26	3.31	2.96	1.48	4.98	5.12	1.82	2.12	1.02	.....
28	.86	1.12	1.26	3.05	2.78	1.44	5.12	4.80	1.72	2.05	.98	.....
29	.85	1.04	1.24	2.85	.....	1.42	4.95	4.22	1.58	2.12	.94	.....
30	.84	.96	1.22	2.60	.....	1.39	4.62	3.70	1.52	3.75	.89	.....
31	.82	.....	1.21	2.52	.....	1.37	.....	3.10	.....	3.16	.86	.....

Daily gage height, in feet, of Cumberland River at Cumberland Falls, Ky., for years ending Sept. 30, 1907-1911 and 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1910-11												
1	1.16	0.86	2.55	3.80	4.34	2.25	2.58	.....	1.15	2.05	0.98	0.81
2	1.11	.92	2.40	.....	4.15	2.21	2.55	.....	1.00	1.88	.97	.78
3	1.07	.97	2.25	.....	3.98	2.18	2.52	5.30	.90	1.73	1.05	.75
4	1.02	1.00	2.04	.....	3.85	2.12	2.50	4.50	.88	1.60	1.40	.72
5	.98	.95	1.86	.....	3.95	2.02	.....	4.05	.86	1.52	1.60	.80
6	1.06	.90	2.22	4.65	4.32	3.05	.....	3.40	.88	1.50	1.45	1.05
7	1.28	.88	2.75	4.15	4.82	5.10	.....	2.70	.90	1.60	1.33	1.03
8	2.05	.87	3.95	3.70	5.00	.....	5.00	2.60	.93	1.70	1.20	1.01
9	1.95	.86	3.42	3.29	.....	.....	4.70	2.48	.95	1.60	1.05	.97
10	1.75	.88	2.70	2.94	4.90	.....	4.32	2.35	.96	1.52	.98	.95
11	1.50	.89	2.45	2.62	4.44	5.08	3.95	2.20	.90	1.48	.95	.93
12	1.36	.88	2.29	2.51	4.05	4.02	3.65	1.90	.87	1.50	1.05	.90
13	1.31	.86	2.14	2.43	3.85	3.54	3.45	2.10	.85	1.70	1.30	.87
14	1.26	.85	1.92	2.40	3.45	3.48	3.90	2.16	.82	1.80	1.90	1.02
15	1.21	.84	1.66	2.36	2.85	3.38	5.05	2.00	.80	1.70	2.25	1.06
16	1.16	.84	1.56	2.34	2.58	3.32	.....	1.95	.80	1.90	2.30	1.10
17	1.12	.82	1.48	2.30	2.70	3.14	5.20	1.90	.85	1.70	2.20	1.08
18	1.06	.82	1.43	2.26	3.08	2.98	4.65	1.85	.90	1.62	2.05	1.02
19	1.00	.80	1.36	2.21	3.34	2.90	3.80	1.81	.95	1.60	1.90	1.00
20	.95	.80	1.31	2.22	3.50	2.85	3.60	1.76	1.00	1.56	1.70	.98
21	.90	.81	1.34	2.50	3.32	2.75	3.35	1.72	1.40	1.50	1.65	1.00
22	.89	.82	1.48	3.10	2.98	2.70	3.15	1.65	1.50	1.43	1.60	1.10
23	.88	.82	1.66	3.90	2.82	2.62	3.00	1.74	1.60	1.40	1.48	1.18
24	.88	.80	1.82	4.90	2.59	2.55	2.85	1.85	1.45	1.37	1.20	1.25
25	.92	.80	1.86	4.35	2.49	2.45	2.75	1.80	1.40	1.35	1.05	1.40
26	.94	.79	1.98	3.90	2.36	2.48	2.62	1.76	1.35	1.30	1.02	1.30
27	.92	.81	2.08	3.60	2.34	2.55	2.40	1.68	1.30	1.20	.98	1.22
28	.90	.84	2.18	3.22	2.28	2.62	2.20	1.55	2.30	1.12	.94	1.15
29	.88	2.12	2.34	3.32	.....	2.70	2.10	1.48	2.10	1.09	.91	1.10
30	.86	2.68	2.60	3.88	.....	2.80	4.50	1.38	2.50	1.05	.88	1.02
31	.84	.....	3.00	4.30	.....	2.60	.....	1.25	.....	1.02	.85	.....

Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.
1911				1911				1911			
1	0.98	1.08	1.95	11	1.20	1.90	.....	21	2.55	2.70	.....
2	.95	1.05	1.80	12	3.15	1.85	.....	22	2.05	2.65	.....
3	.90	1.02	1.70	13	3.00	1.95	.....	23	1.60	2.61	.....
4	.85	.98	1.60	14	2.80	3.90	.....	24	1.45	2.55	.....
5	.90	.91	1.50	15	2.40	3.25	.....	25	1.35	2.45	.....
6	.95	.87	1.40	16	2.18	3.00	.....	26	1.28	2.40	.....
7	.92	1.28	1.30	17	2.00	2.65	.....	27	1.20	2.35	.....
8	.90	2.50	1.28	18	2.20	2.40	.....	28	1.18	2.27	.....
9	.93	2.28	1.25	19	3.90	2.45	.....	29	1.17	2.20	.....
10	1.00	2.05	1.22	20	3.00	2.85	.....	30	1.14	2.05	.....
								31	1.11	.....	.....

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1915							1915						
1	2.92	1.84	3.22	1.88	1.60	2.76	16	2.22	1.82	4.78	3.78	2.26	1.65
2	2.64	1.87	3.20	1.98	1.60	2.46	17	2.16	1.77	4.44	3.07	2.16	1.61
3	2.50	2.08	4.44	1.92	2.20	2.40	18	2.11	1.74	3.40	2.79	3.62	1.58
4	2.40	2.82	4.14	2.28	2.38	2.34	19	2.07	1.72	2.82	2.58	3.80	1.56
5	2.33	2.90	3.10	2.93	2.12	2.34	20	2.03	1.70	2.49	2.43	3.46	1.54
6	2.25	2.76	2.55	3.25	1.88	2.45	21	1.99	1.68	2.48	2.60	3.52	1.72
7	2.20	2.58	2.34	3.40	1.70	2.50	22	1.96	1.66	3.30	2.91	3.45	1.94

Daily gage height, in feet, of Cumberland River at Cumberland Falls, Ky., for years ending Sept. 30, 1907-1911 and 1915-1920.—Continued.

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1915													
8	2.18	2.42	2.64	2.99	1.61	2.42	23	1.94	1.69	3.41	2.52	2.82	1.88
9	2.16	2.32	3.07	2.96	1.58	2.28	24	1.90	2.60	2.80	2.21	2.36	1.82
10	2.14	2.25	2.78	3.12	1.56	2.15	25	1.88	2.40	2.54	2.06	2.19	1.73
11	2.12	2.17	2.50	3.26	2.54	2.02	26	1.86	2.40	2.18	1.91	1.98	1.65
12	2.20	2.09	2.30	3.40	2.60	1.92	27	1.84	3.40	2.00	1.80	2.42	1.60
13	2.28	2.01	2.13	4.70	2.84	1.82	28	1.82	4.62	1.90	1.75	4.90	1.56
14	2.30	1.94	2.12	7.00	2.88	1.74	29	1.81	5.70	1.82	1.70	4.45	2.15
15	2.28	1.88	2.22	5.44	2.66	1.68	30	1.84	4.54	1.77	1.65	4.08	2.52
							31	....	3.57	....	1.62	3.30	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	5.48	1.70	3.00	6.78	3.18	3.02	3.59	2.69	3.16	1.67	1.85	1.58
2	6.42	1.68	2.82	5.46	4.25	3.48	3.30	2.55	2.74	1.63	1.72	1.56
3	6.02	1.66	2.70	5.30	4.52	4.25	3.08	2.45	2.38	1.60	1.80	1.57
4	4.04	1.64	2.59	4.86	4.08	4.42	2.92	2.43	2.14	1.58	2.84	1.56
5	3.30	1.62	2.50	4.08	3.78	4.12	2.79	2.32	1.97	1.58	2.92	1.55
6	3.74	1.60	2.41	3.78	3.71	3.70	2.65	2.24	1.92	1.58	2.36	1.54
7	3.40	1.58	2.30	5.92	3.73	3.76	2.57	2.16	2.17	1.56	2.32	1.53
8	3.03	1.56	2.22	8.12	3.86	4.65	3.17	2.08	2.84	1.56	4.75	1.52
9	2.68	1.58	2.18	7.18	4.00	4.94	4.16	2.02	2.85	1.66	3.80	1.53
10	2.45	1.63	2.14	5.51	4.58	4.20	4.35	1.94	2.58	2.20	3.16	1.54
11	2.28	1.61	2.11	4.14	4.85	3.61	3.92	1.89	2.32	2.22	2.79	1.53
12	2.14	1.65	2.32	3.78	4.24	3.26	3.59	1.84	2.60	2.12	2.66	1.52
13	2.05	2.44	2.68	6.19	3.84	2.99	3.41	1.78	3.26	2.00	2.70	1.50
14	1.97	2.94	2.90	6.48	3.45	2.83	3.28	1.74	3.00	1.90	3.26	1.47
15	1.90	8.31	2.90	5.74	3.08	2.73	3.06	1.70	2.79	1.82	3.14	1.53
16	1.86	7.91	4.15	4.40	2.88	2.72	2.85	1.66	2.63	1.76	2.86	1.52
17	1.82	6.01	6.01	3.89	2.78	2.63	2.71	1.62	2.68	1.72	2.88	2.04
18	1.78	4.50	10.22	3.52	2.72	2.54	2.59	1.60	2.84	2.08	3.33	1.72
19	3.06	4.18	9.75	3.20	2.64	2.49	2.49	1.58	2.88	2.52	3.31	1.58
20	3.38	4.64	8.85	3.04	2.52	2.45	2.37	1.56	2.48	2.78	2.50	1.52
21	2.80	4.52	7.75	3.02	2.42	2.46	2.32	1.55	2.34	2.92	2.24	1.46
22	2.38	3.94	5.61	3.64	2.36	2.47	2.32	1.54	2.25	4.04	2.08	1.41
23	2.22	3.41	3.69	5.94	2.32	2.52	2.36	1.58	2.11	3.68	1.95	1.38
24	2.06	3.02	3.08	5.70	2.51	2.47	2.54	1.64	2.02	3.00	1.83	1.38
25	1.93	2.79	2.98	4.64	2.92	2.38	2.50	1.78	1.87	2.50	1.76	1.36
26	1.84	2.62	3.67	3.85	3.15	2.34	2.43	2.01	1.84	2.26	1.72	1.35
27	1.80	2.85	4.93	3.46	3.45	2.77	2.49	1.94	1.91	2.02	1.68	1.34
28	1.78	3.60	4.88	3.15	3.30	4.46	2.57	1.81	1.92	1.86	1.66	1.33
29	1.76	3.57	7.46	3.02	3.12	4.89	2.70	1.77	1.88	1.79	1.64	1.35
30	1.74	3.26	8.20	2.93	....	4.25	2.81	2.99	1.75	2.64	1.62	1.35
31	1.72	....	7.55	2.83	....	3.88	....	3.37	....	2.10	1.60	....
1916-17												
1	1.34	1.50	1.76	3.58	4.34	4.93	3.27	2.75	1.90	1.64	2.02	2.28
2	1.71	1.48	1.78	2.97	4.26	7.46	3.47	2.58	2.10	1.80	1.86	2.48
3	1.56	1.48	1.68	3.36	4.32	9.82	3.84	2.47	2.16	1.64	1.98	2.36
4	1.46	1.46	1.65	7.42	3.58	10.46	3.70	2.27	2.06	1.56	2.05	2.15
5	1.40	1.44	1.66	9.32	3.21	10.32	3.62	2.24	1.98	1.53	1.94	2.02
6	1.36	1.42	1.67	9.30	2.90	9.38	4.35	2.16	1.92	1.50	1.85	1.90
7	1.34	1.41	1.67	8.90	2.68	8.14	5.22	2.10	1.86	1.46	1.70	1.78
8	1.32	1.40	1.66	8.22	2.75	5.74	4.90	2.08	1.88	1.44	1.62	1.69
9	1.30	1.39	1.66	5.95	2.79	3.98	4.21	2.00	1.96	1.42	1.60	1.62
10	1.28	1.38	1.64	3.60	2.58	3.87	3.71	2.05	2.05	1.40	1.84	1.56

Daily gage height, in feet, of Cumberland River at Cumberland Falls, Ky., for years ending Sept. 30, 1907-1911 and 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
11	1.26	1.37	1.63	3.07	2.56	3.57	3.34	2.04	2.00	1.38	2.00	1.52
12	1.25	1.36	1.74	2.81	2.44	5.10	3.12	2.02	1.99	1.36	2.09	1.48
13	1.42	1.36	1.74	2.60	2.39	7.40	2.98	2.10	1.94	1.34	1.95	1.45
14	1.42	1.40	1.74	3.11	2.26	6.05	2.92	2.12	1.92	1.32	1.78	1.42
15	1.37	1.42	1.71	4.28	2.50	5.03	2.82	2.04	1.87	1.20	1.74	1.40
16	1.34	1.42	1.66	4.62	3.04	4.38	2.75	1.94	1.80	2.46	2.92	1.36
17	1.56	1.42	1.60	3.88	3.30	8.22	2.66	1.82	1.70	3.54	3.32	1.34
18	1.86	1.40	1.57	3.48	3.23	8.61	2.58	1.76	1.65	3.92	2.77	1.32
19	2.46	1.39	1.60	3.62	3.30	7.74	2.47	1.66	1.86	3.52	2.32	1.30
20	2.32	1.38	1.62	3.72	6.00	6.03	2.38	1.84	1.88	3.30	2.06	1.28
21	3.21	1.37	1.67	3.62	7.24	4.20	2.30	1.76	1.84	2.80	1.90	1.26
22	2.85	1.38	2.10	5.72	6.89	4.24	2.23	1.82	1.88	2.87	1.78	1.24
23	2.46	1.41	3.30	6.72	5.33	4.05	2.15	1.79	1.64	3.04	2.05	1.23
24	2.16	1.43	3.66	5.95	6.07	6.88	2.09	1.98	1.87	3.06	2.10	1.22
25	1.96	1.42	3.08	4.35	6.36	7.37	2.03	2.04	1.83	3.08	2.79	1.22
26	1.81	1.72	2.68	3.50	5.68	7.06	1.96	1.98	1.80	3.43	2.32	1.28
27	1.71	1.86	2.46	3.12	4.42	6.04	1.90	1.78	1.78	3.12	2.02	1.60
28	1.64	1.86	4.94	2.89	3.77	5.41	1.86	1.70	1.77	3.33	1.83	1.69
29	1.59	1.81	7.42	2.91	....	5.13	2.13	1.78	1.86	2.96	1.72	1.90
30	1.56	1.74	7.06	4.38	....	4.36	2.52	2.12	1.68	2.56	1.64	1.90
31	1.52	....	5.88	4.42	....	3.65	....	2.06	....	2.23	1.72	....
1917-18												
1	1.70	2.5	1.40	....	10.0	2.95	2.55	2.95	2.00	3.5	1.94	1.98
2	1.62	2.3	1.40	....	7.4	2.8	2.5	2.8	1.91	4.3	1.78	2.02
3	1.56	2.08	1.42	....	4.7	2.7	2.85	2.65	1.91	3.2	1.68	2.2
4	1.48	1.96	1.44	2.06	3.5	2.55	3.9	2.55	1.82	2.5	1.64	1.96
5	1.42	1.86	1.45	2.06	3.15	2.6	4.1	2.45	1.75	2.25	1.54	2.03
6	1.37	1.79	1.44	2.10	2.85	2.75	3.8	2.35	1.77	2.04	1.49	2.3
7	1.34	1.72	1.43	2.75	2.8	3.2	3.6	2.25	1.82	1.86	1.46	2.4
8	1.32	1.66	1.44	3.4	2.8	4.0	7.2	2.2	1.79	1.78	1.44	2.25
9	1.30	1.62	1.44	3.4	2.75	4.2	7.5	2.4	1.65	1.82	1.42	2.10
10	1.28	1.58	1.44	2.8	2.65	3.6	6.6	2.55	1.63	1.95	1.40	1.87
11	1.26	1.56	1.43	2.5	2.65	3.6	5.0	2.55	1.59	1.84	1.50	1.72
12	1.26	1.54	1.44	2.55	2.7	3.4	3.8	2.3	1.54	1.70	1.64	1.64
13	1.26	1.52	1.54	3.15	2.7	3.2	3.4	3.1	1.51	1.64	1.60	1.58
14	1.24	1.50	1.60	3.6	2.6	3.05	3.0	6.4	1.50	1.56	1.50	1.53
15	1.24	1.48	1.62	4.0	2.5	3.0	2.8	6.2	1.46	1.52	1.46	1.49
16	1.23	1.47	1.62	4.3	2.45	3.0	2.7	4.8	1.42	1.48	1.45	1.46
17	1.23	1.46	1.62	4.2	2.45	2.85	2.7	3.4	1.40	1.44	1.44	1.46
18	1.23	1.45	1.61	3.6	2.4	2.7	2.75	2.95	1.49	1.40	1.43	1.44
19	1.50	1.44	1.60	3.0	2.3	2.6	2.9	2.8	1.43	1.41	1.46	1.42
20	4.1	1.43	1.56	2.65	2.9	2.5	2.95	3.7	1.40	1.42	1.49	1.43
21	3.2	1.42	1.53	2.5	4.2	2.6	3.3	4.1	2.07	1.42	1.56	1.40
22	2.6	1.41	1.58	2.4	4.2	2.9	4.5	3.6	3.1	1.40	1.51	1.44
23	2.25	1.40	1.68	2.3	3.7	2.95	4.4	4.5	2.7	1.40	1.44	1.44
24	2.0	1.40	1.78	2.3	3.3	2.9	3.7	4.3	2.55	1.38	1.38	1.42
25	1.84	1.40	1.88	2.3	3.0	3.5	3.2	3.7	2.3	1.50	1.34	1.41
26	1.76	1.41	2.35	2.45	3.0	3.7	3.15	3.2	2.5	1.46	1.32	1.39
27	1.68	1.40	2.8	6.7	3.1	3.7	3.2	2.8	3.0	1.40	1.40	1.39
28	1.64	1.40	2.8	12.2	3.0	3.3	3.05	2.6	2.7	1.41	1.44	1.39
29	1.60	1.39	2.7	11.8	....	3.05	2.95	2.45	2.35	1.47	1.42	1.39
30	1.74	1.40	....	12.0	....	2.8	3.0	2.35	2.7	1.50	1.56	1.38
31	1.80	....	2.13	12.1	....	2.65	....	2.14	....	1.88	1.75	....

Daily gage height, in feet, of Cumberland River at Cumberland Falls, Ky., for years ending Sept. 30, 1907-1911 and 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1918-19												
1	1.38	6.4	2.95	4.4	2.5	3.7	3.2	3.8	2.5	1.81	1.32	1.24
2	1.38	5.0	2.65	9.3	2.4	3.3	2.9	4.4	2.35	1.67	1.34	1.25
3	1.37	3.2	2.50	9.3	2.3	3.05	2.75	5.1	2.2	1.61	1.29	1.30
4	1.35	2.65	2.30	8.8	2.25	2.9	2.6	4.2	2.04	1.54	1.44	1.32
5	1.31	2.45	2.25	7.8	2.25	3.0	2.5	3.3	1.94	1.49	1.58	1.33
6	1.28	2.25	2.16	5.3	2.2	5.7	2.45	2.95	1.86	1.48	1.54	1.32
7	1.26	2.14	2.08	3.6	2.18	5.7	2.4	2.95	1.78	1.43	1.48	1.29
8	1.24	2.02	2.02	3.2	2.12	4.8	2.3	3.1	1.82	1.51	1.72	1.26
9	1.23	1.93	1.98	3.2	2.11	4.6	2.25	3.2	1.86	1.52	1.64	1.24
10	1.22	1.87	1.96	3.15	2.09	5.0	2.2	3.2	2.12	1.45	1.52	1.22
11	1.22	1.82	1.98	2.95	2.06	4.9	2.35	2.9	1.98	1.52	1.44	1.20
12	1.23	1.77	2.04	2.8	2.02	3.9	2.9	2.7	1.84	1.56	1.53	1.18
13	1.23	1.72	2.05	2.7	2.04	3.4	3.5	2.6	1.79	1.48	2.16	1.16
14	1.20	1.70	2.6	2.7	2.04	3.15	3.3	2.45	1.76	1.44	2.2	1.14
15	1.19	1.68	5.0	2.8	2.35	2.95	2.95	2.4	1.70	1.44	1.90	1.12
16	1.18	1.66	5.9	3.0	2.85	2.8	2.95	2.4	1.64	1.38	1.65	1.10
17	1.18	1.78	5.0	3.1	2.85	3.15	3.5	2.45	1.60	1.32	1.57	1.09
18	1.28	2.4	3.5	3.7	2.65	4.0	3.8	2.45	1.56	1.30	1.54	1.08
19	1.63	2.4	2.95	4.7	2.6	3.6	3.5	2.4	1.51	1.34	1.53	1.07
20	2.04	2.45	2.70	4.6	2.55	3.2	3.1	2.45	1.47	1.38	1.47	1.06
21	2.9	2.45	2.55	3.9	2.6	3.05	2.85	3.9	1.44	1.38	1.43	1.06
22	2.65	2.4	2.55	3.4	2.85	2.8	2.7	4.6	1.43	1.33	1.39	1.42
23	2.4	2.3	3.5	3.5	4.3	2.65	2.7	3.8	1.46	1.31	1.36	1.32
24	2.18	2.2	4.7	4.7	4.5	2.55	2.6	3.2	1.72	1.32	1.32	1.16
25	2.09	2.14	3.9	4.9	4.1	2.50	2.5	3.3	1.98	1.32	1.30	1.08
26	2.10	2.08	3.3	4.4	4.0	2.40	2.4	4.4	2.25	1.32	1.28	1.07
27	2.25	2.03	3.0	3.6	4.1	3.15	2.3	5.7	2.6	1.30	1.27	1.06
28	2.4	2.01	2.75	3.15	4.0	5.0	2.25	4.8	2.35	1.26	1.30	1.05
29	2.3	2.35	2.65	2.95	....	5.3	2.55	3.6	2.18	1.24	1.31	1.04
30	3.4	3.05	2.50	2.75	....	4.2	3.4	3.0	1.98	1.22	1.28	1.06
31	6.3	....	2.45	2.60	....	3.5	....	2.8	....	1.22	1.26	....
1919-20												
1	1.10	5.8	3.9	2.19	2.75	3.0	3.3	3.3	2.07	1.74	1.46	2.5
2	1.10	7.7	3.8	2.3	2.65	2.9	7.7	3.4	1.92	1.69	1.42	2.35
3	1.10	7.0	3.3	2.3	2.5	2.85	8.4	3.3	1.89	1.65	1.42	2.17
4	1.11	6.1	2.9	2.2	4.9	2.8	7.2	3.15	2.9	1.77	1.50	2.04
5	1.22	3.9	2.7	2.12	6.0	3.15	5.4	2.95	3.9	1.85	1.56	1.94
6	1.42	2.9	2.65	2.01	4.9	3.9	4.3	2.8	4.2	1.78	1.56	1.88
7	1.34	2.6	3.9	2.08	4.1	4.0	3.9	2.7	3.9	1.70	1.66	1.83
8	1.23	2.4	5.6	2.55	3.6	3.6	3.8	2.7	3.15	1.66	1.74	1.80
9	1.19	2.25	5.8	4.5	3.3	3.15	3.8	2.65	2.7	1.64	1.90	1.79
10	1.16	2.14	5.1	4.4	3.1	2.95	3.5	2.6	2.5	1.70	2.35	1.88
11	1.20	2.3	4.6	4.2	3.0	2.9	3.2	2.55	2.25	1.73	2.4	1.80
12	2.6	2.7	4.3	3.6	2.9	5.2	3.0	2.45	2.15	1.70	2.75	4.3
13	3.7	2.75	4.1	3.2	2.95	8.0	2.9	2.4	2.07	1.78	3.3	6.1
14	3.9	2.75	6.3	2.9	2.95	7.6	2.85	2.35	1.99	1.74	3.3	5.0
15	3.5	2.8	6.4	2.7	2.9	6.7	2.75	2.3	1.90	1.74	4.8	4.3
16	5.3	2.7	5.6	2.7	2.8	4.9	2.6	2.2	1.81	1.94	4.8	3.5
17	5.8	2.5	4.2	3.0	2.7	4.1	2.6	2.14	1.73	3.0	4.3	3.15
18	5.4	2.4	3.5	3.1	2.6	4.4	2.6	2.10	1.66	2.7	3.4	2.8
19	3.7	2.25	3.2	3.15	2.7	6.5	2.5	2.10	1.62	2.5	3.0	2.55
20	2.8	2.15	2.95	3.05	2.7	7.2	2.5	2.12	1.83	3.3	2.9	2.3
21	2.4	2.05	2.75	4.4	2.6	6.6	2.95	2.10	3.0	3.15	3.0	2.2
22	2.2	2.00	2.6	8.0	5.4	5.5	2.95	2.06	3.5	2.6	4.7	2.08
23	2.45	1.94	2.55	10.2	7.1	3.7	2.85	1.98	3.3	2.25	4.6	1.96
24	4.7	1.88	2.45	9.9	6.4	3.4	2.75	1.92	2.8	2.02	3.7	1.88
25	4.9	1.84	2.4	9.2	5.1	3.1	2.7	2.7	2.55	1.87	3.15	1.83
26	4.1	2.35	2.3	8.3	4.3	2.95	3.15	2.85	2.25	1.72	2.8	1.79
27	3.3	3.9	2.25	7.1	3.6	2.8	3.7	2.8	2.10	1.66	2.6	1.80
28	2.8	4.3	2.2	4.5	3.3	2.7	3.8	2.65	1.96	1.63	2.5	1.87
29	2.45	4.0	2.2	3.5	3.15	2.65	3.5	2.4	1.88	1.58	2.35	1.87
30	2.25	3.7	2.19	3.1	....	2.60	3.2	2.25	1.80	1.54	2.2	1.87
31	2.14	....	2.14	2.95	....	2.50	....	2.19	....	1.50	2.2	....

Daily discharge, in second feet, of Cumberland River at Cumberland Falls, Ky. for the years ending September 30, 1907-1911 and 1915-1920.

Day	Aug.	Sept.	Day	Aug.	Sept.	Day	Aug.	Sept.
1907			1907			1907		
1	....	227	11	....	6,710	21	1,200	748
2	....	219	12	....	11,400	22	1,200	1,730
3	....	650	13	....	6,710	23	1,110	5,740
4	....	2,040	14	....	3,970	24	3,190	4,830
5	....	2,150	15	219	2,040	25	2,950	2,950
6	....	1,730	16	212	1,280	26	1,540	2,150
7	....	1,110	17	251	982	27	1,630	1,360
8	....	918	18	300	734	28	1,630	982
9	....	2,950	19	460	624	29	1,200	720
10	....	3,440	20	1,200	508	30	380	572
						31	300	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1907-08												
1	472	186	1,830	11,800	5,740	7,400	12,300	3,700	982	219	320	166
2	412	284	1,540	6,380	9,700	19,200	18,100	3,440	870	243	320	148
3	360	380	1,360	4,250	8,510	18,600	19,200	3,440	950	235	277	132
4	350	2,830	1,280	4,250	5,430	17,500	17,500	3,700	1,280	219	268	111
5	350	2,480	1,110	9,300	4,830	8,130	12,800	3,970	1,200	219	260	142
6	496	1,630	1,010	12,300	6,710	6,710	6,710	6,710	982	235	251	1,280
7	870	1,280	886	9,300	12,800	8,510	5,430	7,760	902	822	243	3,190
8	1,280	1,010	762	6,710	10,500	7,400	4,540	8,130	822	1,830	235	2,480
9	2,040	1,450	637	4,540	7,760	6,380	3,700	8,130	790	3,190	219	1,450
10	2,600	5,430	650	3,440	6,060	5,130	3,190	6,380	678	2,150	206	1,030
11	2,050	12,300	650	2,830	22,100	5,430	3,190	4,830	520	1,450	776	720
12	1,360	12,300	762	4,540	19,200	7,050	3,190	3,700	380	1,110	624	496
13	1,030	5,430	854	6,710	10,500	6,060	3,190	3,190	310	822	496	320
14	762	3,190	886	7,760	7,400	9,700	3,190	2,600	277	650	380	206
15	598	2,830	998	6,060	25,000	7,760	3,190	3,970	243	624	340	166
16	496	2,260	1,280	4,830	22,100	5,430	5,130	3,700	212	870	300	137
17	412	1,630	1,450	6,060	17,500	5,430	5,430	3,190	193	2,370	268	121
18	360	1,730	1,730	7,050	7,400	9,700	4,540	2,480	166	2,040	251	111
19	310	2,260	1,830	5,430	5,130	19,200	3,700	1,730	153	982	219	100
20	268	3,190	1,630	3,970	4,250	17,500	3,440	1,940	142	4,830	179	92
21	251	3,440	1,540	3,440	3,700	11,400	3,190	1,830	132	2,950	193	92
22	219	3,440	1,630	2,710	3,190	8,130	2,710	1,630	121	1,540	227	84
23	212	4,830	1,730	2,480	2,710	6,710	2,260	1,450	111	1,280	235	84
24	212	11,800	1,630	2,260	2,600	5,740	2,040	1,280	100	1,050	219	76
25	186	16,400	3,700	2,040	2,480	5,430	5,740	1,110	121	734	206	68
26	179	10,500	3,700	1,830	2,260	4,830	19,200	982	520	533	193	60
27	160	5,130	3,190	2,040	2,710	4,250	17,000	950	678	380	251	60
28	153	3,700	2,710	2,260	4,540	3,700	11,400	950	546	310	251	60
29	153	2,950	2,480	2,150	4,540	3,700	6,710	950	400	277	219	64
30	153	2,150	7,760	2,040	....	4,250	4,540	1,080	235	251	206	58
31	179	....	16,400	2,480	....	6,060	....	1,110	....	268	173	....
1908-9												
1	58	84	193	3,190	1,940	5,130	9,700	10,500	870	5,130	400	153
2	58	92	219	3,190	1,630	3,970	7,400	22,100	982	7,400	822	153
3	55	100	320	2,950	1,630	3,440	4,830	12,300	1,280	6,380	1,630	148
4	55	100	762	2,950	1,540	2,950	3,190	7,400	2,260	4,250	1,940	142
5	55	92	918	3,190	1,730	2,710	2,710	6,060	3,700	2,950	2,480	142
6	55	88	918	3,700	4,250	3,440	2,480	5,130	4,250	2,040	2,150	132
7	55	84	1,080	3,700	8,900	6,710	3,970	3,970	3,440	3,700	1,450	132

Daily discharge, in second feet, of Cumberland River at Cumberland Falls, Ky. for the years ending September 30, 1907-1911 and 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1908-09												
8	60	80	1,280	3,700	9,300	11,400	8,130	3,190	2,950	7,400	886	126
9	96	80	2,370	3,440	7,050	22,100	7,760	2,480	2,260	11,800	472	126
10	96	96	2,370	3,190	9,700	28,000	6,380	2,040	2,040	10,500	400	132
11	92	260	1,730	3,190	17,500	25,000	5,430	2,480	3,700	6,710	424	148
12	92	227	1,540	2,950	13,800	13,800	4,250	2,830	7,050	5,430	533	142
13	92	585	4,250	3,190	8,130	13,300	3,190	3,190	7,400	6,710	637	153
14	96	822	3,700	6,060	6,710	12,800	2,950	2,600	6,710	19,200	664	179
15	76	678	2,830	12,300	6,710	11,800	2,710	2,150	7,760	13,800	706	206
16	60	496	2,040	25,000	12,300	8,130	2,950	1,730	8,900	10,500	2,710	235
17	60	380	1,830	21,500	22,100	6,060	4,250	1,450	8,900	8,130	19,200	251
18	60	284	1,730	17,500	18,100	4,830	6,060	1,280	7,760	6,060	9,300	260
19	64	235	1,630	12,800	11,000	3,700	8,900	1,030	6,380	4,540	3,700	227
20	60	219	1,540	6,710	7,050	3,970	11,800	1,020	5,130	3,190	2,480	206
21	60	206	1,360	3,970	7,050	6,710	22,100	1,000	3,970	2,040	1,540	193
22	58	206	1,280	3,190	9,700	7,400	17,500	993	2,480	1,450	934	179
23	55	193	2,480	2,950	12,800	6,710	12,800	981	1,830	1,010	484	179
24	55	193	7,050	2,710	22,100	6,710	10,100	968	2,370	598	380	173
25	55	186	7,050	2,480	37,600	22,100	8,130	956	2,950	380	320	166
26	55	179	6,060	2,260	23,900	19,800	6,380	940	3,970	330	284	160
27	55	179	5,130	2,040	11,400	17,500	6,380	932	7,400	300	235	153
28	58	166	3,700	2,040	7,400	15,300	4,830	919	8,130	284	212	148
29	60	166	2,950	2,370		14,300	3,700	907	6,380	268	206	142
30	68	153	2,950	2,260		11,800	3,440	894	4,250	251	179	137
31	76		3,190	2,150				882		227	166	
1909-10												
1	137	166	268	520	2,710	4,250	734	6,710	4,250	902	3,440	193
2	132	153	320	508	2,600	8,510	692	4,250	3,970	918	2,830	300
3	126	148	460	496	2,370	7,760	734	3,700	2,700	1,080	2,040	496
4	121	142	637	496	2,150	6,060	870	3,440	3,440	1,110	2,710	918
5	121	142	902	692	2,040	5,430	1,010	3,190	3,190	1,280	3,700	3,190
6	111	132	1,080	2,480	1,830	4,540	998	3,700	2,950	1,730	4,250	2,950
7	111	132	1,280	8,900	1,630	3,700	918	4,250	2,950	2,260	4,830	2,950
8	100	132	1,280	31,200	1,450	2,950	822	4,540	2,710	2,260	6,060	3,440
9	100	142	1,360	10,500	1,280	2,480	748	5,740	2,710	7,400	5,740	3,970
10	105	153	1,450	7,760	1,280	2,150	706	8,900	2,600	6,710	4,540	6,710
11	111	153	1,450	6,060	1,280	1,940	678	11,800	5,430	6,060	3,700	6,060
12	121	148	1,360	5,130	1,540	1,830	762	13,800	8,130	5,430	3,440	5,430
13	132	142	1,280	4,250	1,830	1,730	950	13,300	6,710	5,130	2,830	5.130
14	148	142	1,110	3,190	2,040	1,730	1,280	10,500	6,380	4,830	2,370	4,830
15	166	132	1,080	2,710	2,260	1,630	1,450	8,130	5,740	4,540	1,830	3,970
16	179	132	1,010	2,600	2,600	1,630	1,630	6,380	5,430	4,540	1,360	6,060
17	206	142	950	3,190	3,440	1,540	3,190	4,830	4,540	6,380	1,080	2,600
18	227	166	886	4,250	22,100	1,450	7,050	3,700	3,970	8,130	886	2,260
19	251	251	854	6,710	16,400	1,450	8,130	3,190	2,950	7,760	678	1,830
20	251	484	790	11,000	13,300	1,360	7,760	2,830	2,260	6,380	572	1,540
21	243	572	734	12,800	11,400	1,280	7,050	2,830	1,730	5,430	546	1,440
22	235	533	706	10,500	9,300	1,280	6,710	3,190	1,540	4,830	496	1,340
23	227	496	692	7,760	7,400	1,110	7,400	3,440	1,280	3,970	472	1,240
24	219	533	678	6,380	6,710	1,090	8,510	4,250	1,540	3,440	436	1,140
25	219	572	650	6,060	5,740	1,030	9,700	10,100	1,200	2,710	390	1,040
26	206	472	624	5,430	4,830	966	10,500	13,300	1,200	1,830	360	940
27	199	360	598	5,130	4,250	918	11,400	11,800	1,450	2,040	320	840
28	193	424	598	4,250	3,700	854	11,800	10,500	1,280	1,940	284	740
29	186	340	572	3,700		822	11,400	8,130	1,080	2,040	251	640
30	179	268	546	3,190		776	9,700	6,380	982	6,710	212	540
31	166		533	2,950		748		4,540		4,830	193	

Daily discharge, in second feet, of Cumberland River at Cumberland Falls, Ky. for the years ending September 30, 1907-1911 and 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1910-11												
1	472	193	3,190	6,710	8,510	2,370	3,190	47,600	460	1,940	284	160
2	412	235	2,710	22,100	8,130	2,260	3,190	28,000	300	1,630	277	142
3	370	277	2,370	34,400	7,400	2,260	2,950	12,800	219	1,360	350	126
4	320	300	1,940	25,000	6,710	2,040	2,950	9,300	206	1,110	790	111
5	284	260	1,540	17,000	7,400	1,830	28,000	7,400	193	982	1,110	153
6	360	219	2,260	9,700	8,510	4,250	44,300	5,430	206	950	870	350
7	624	206	3,700	8,130	10,500	19,200	26,200	3,440	219	1,110	692	330
8	1,940	199	7,400	6,380	16,400	37,600	11,400	3,190	243	1,280	520	310
9	1,730	193	5,430	5,130	28,000	28,600	10,100	2,950	260	1,110	350	277
10	1,360	206	3,440	3,970	11,000	19,800	8,510	2,600	268	982	284	260
11	950	212	2,830	3,190	8,900	11,800	7,400	2,260	219	918	260	243
12	734	206	2,480	2,950	7,400	7,400	6,060	1,630	199	950	350	219
13	664	193	2,150	2,830	6,710	5,740	5,430	2,040	186	1,280	650	199
14	598	186	1,630	2,710	5,430	5,740	7,050	2,150	166	1,450	1,630	320
15	533	179	1,200	2,600	3,700	5,430	11,400	1,830	153	1,280	2,370	360
16	472	179	1,050	2,600	3,190	5,130	22,100	1,730	153	1,630	2,480	400
17	424	166	918	2,480	3,440	4,540	12,300	1,630	186	1,280	2,260	380
18	360	166	838	2,370	4,540	4,250	9,700	1,540	219	1,110	1,940	320
19	300	153	734	2,260	5,130	3,970	6,710	1,450	260	1,110	1,630	300
20	260	153	664	2,260	5,740	3,700	6,060	1,360	300	1,050	1,280	284
21	219	160	706	2,950	5,130	3,700	5,430	1,280	790	950	1,280	300
22	212	166	918	4,540	4,250	3,440	4,830	1,200	950	838	1,110	400
23	206	166	1,200	7,050	3,700	3,190	4,250	1,360	1,110	790	918	496
24	206	153	1,450	11,000	3,190	3,190	3,700	1,540	870	748	520	585
25	235	153	1,540	8,900	2,950	2,830	3,700	1,450	790	720	350	790
26	251	148	1,830	7,050	2,600	2,950	3,190	1,360	720	650	320	650
27	235	160	2,040	6,060	2,600	3,190	2,710	1,280	650	520	284	546
28	219	179	2,260	4,830	2,480	3,190	2,260	1,030	2,480	424	251	460
29	206	2,040	2,600	5,130		3,440	2,040	918	2,040	390	227	400
30	193	3,440	3,190	7,050		3,700	9,300	762	2,950	350	206	320
31	179		4,250	8,510		3,190		585		320	186	

Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.	Day	Oct.	Nov.	Dec.
1911				1911				1911			
1	284	380	1,730	11	520	1,630		21	3,190	3,440	
2	260	350	1,450	12	4,830	1,540		22	1,940	3,190	
3	219	320	1,280	13	4,250	1,730		23	1,110	3,190	
4	186	284	1,110	14	3,700	7,050		24	870	3,190	
5	219	227	950	15	2,710	4,830		25	720	2,830	
6	260	199	790	16	2,260	4,250		26	624	2,710	
7	235	624	640	17	1,830	3,190		27	520	2,600	
8	219	2,950	624	18	2,260	2,710		28	496	2,370	
9	243	2,480	585	19	7,050	2,830		29	484	2,260	
10	300	1,940	546	20	4,250	3,700		30	448	1,940	
								31	412		

Daily discharge, in second feet, of Cumberland River at Cumberland Falls, Ky. for the years ending September 30, 1907-1911 and 1915-1920.—Continued.

Day	Apr.	May	June	July	Aug.	Sept.	Day	Apr.	May	June	July	Aug.	Sept.
1915							1915						
1	2,800	686	3,570	742	380	2,440	16	1,270	658	9,460	5,410	1,360	440
2	2,220	728	3,570	890	380	1,780	17	1,200	591	7,680	3,180	1,200	392
3	1,890	1,060	7,680	800	1,270	1,670	18	1,110	552	4,150	2,560	4,760	359
4	1,670	2,560	6,470	1,460	1,670	1,560	19	1,040	526	2,560	2,110	5,410	338
5	1,560	2,800	3,300	2,920	1,130	1,560	20	971	500	1,890	1,780	4,450	317
6	1,360	2,440	2,000	3,570	742	1,780	21	905	476	1,890	2,110	4,450	526
7	1,270	2,110	1,560	4,150	500	1,890	22	860	452	3,850	2,800	4,150	830
8	1,230	1,670	2,220	3,050	392	1,670	23	830	488	4,150	1,890	2,560	742
9	1,200	1,460	3,180	2,920	359	1,460	24	770	2,110	2,560	1,270	1,560	658
10	1,160	1,360	2,560	3,300	338	1,180	25	742	1,670	2,000	1,020	1,250	539
11	1,130	1,220	1,890	3,850	2,000	954	26	714	1,670	1,230	785	890	440
12	1,270	1,070	1,460	4,150	2,110	800	27	686	4,150	920	630	1,670	380
13	1,460	937	1,140	9,000	2,680	658	28	658	8,550	770	565	9,930	338
14	1,460	830	1,130	21,700	2,800	552	29	644	14,000	658	500	7,680	1,180
15	1,460	742	1,270	12,400	2,220	476	30	686	8,110	591	440	6,470	1,890
							31	......	4,760	......	404	3,850	......

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	12,900	500	3,050	20,400	3,570	3,050	4,760	2,330	3,440	464	700	359
2	18,000	476	2,560	12,900	6,860	4,450	3,850	2,000	2,440	416	526	338
3	15,600	452	2,330	11,900	8,110	6,860	3,300	1,780	1,670	380	630	348
4	6,100	428	2,110	9,930	6,470	7,680	2,800	1,780	1,160	359	2,680	338
5	3,850	404	1,890	6,470	5,410	6,470	2,560	1,460	875	359	2,800	328
6	5,080	380	1,670	5,410	5,080	5,080	2,220	1,360	800	359	1,560	317
7	4,150	359	1,460	15,000	5,080	5,410	2,000	1,200	1,220	338	1,460	306
8	3,180	338	1,270	28,800	5,750	8,550	3,440	1,060	2,680	338	9,460	296
9	2,330	359	1,230	23,000	6,100	9,930	6,860	954	2,680	452	5,410	306
10	1,780	416	1,160	12,900	8,550	6,860	7,680	830	2,110	1,270	3,440	317
11	1,460	392	1,110	6,470	9,460	4,760	5,750	756	1,460	1,270	2,560	306
12	1,160	440	1,460	5,410	6,860	3,850	4,760	686	2,110	1,130	2,220	296
13	1,000	1,780	2,330	16,800	5,410	3,050	4,150	604	3,850	920	2,330	275
14	875	2,920	2,800	18,600	4,150	2,680	3,850	552	3,050	770	3,850	251
15	770	30,200	2,800	14,000	3,300	2,440	3,180	500	2,560	658	3,440	306
16	714	27,500	6,860	7,680	2,800	2,330	2,680	452	2,220	578	2,680	296
17	658	15,600	15,600	5,750	2,560	2,220	2,330	404	2,330	526	2,800	988
18	604	8,110	43,500	4,450	2,330	2,000	2,110	380	2,680	1,060	3,850	526
19	3,180	6,860	40,700	3,570	2,220	1,890	1,890	359	2,800	1,890	3,850	359
20	4,150	8,550	33,700	3,180	1,890	1,780	1,560	338	1,890	2,560	1,890	296
21	2,560	8,110	26,800	3,050	1,670	1,780	1,460	328	1,560	2,800	1,360	243
22	1,670	5,750	13,400	4,760	1,560	1,780	1,460	317	1,360	6,100	1,060	203
23	1,270	4,150	5,080	15,000	1,460	1,890	1,560	359	1,110	5,080	845	185
24	1,020	3,050	3,300	14,000	1,890	1,780	2,000	428	954	3,050	672	181
25	815	2,560	3,050	8,550	2,800	1,670	1,890	604	728	1,890	578	167
26	686	2,110	5,080	5,410	3,440	1,560	1,780	937	686	1,360	526	160
27	630	2,680	9,930	4,450	4,150	2,440	1,890	830	785	954	476	153
28	604	4,760	9,930	3,440	3,850	8,110	2,000	644	800	714	452	146
29	578	4,760	24,900	3,050	3,300	9,930	2,330	591	742	617	428	160
30	552	3,850	29,500	2,920	......	6,860	2,560	3,050	565	2,220	404	160
31	526	......	25,600	2,680	......	5,750	......	4,150	......	1,090	380	......

Daily discharge, in second feet, of Cumberland River at Cumberland Falls, Ky. for the years ending September 30, 1907-1911 and 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
1	153	275	578	4,760	7,260	9,930	3,850	2,440	770	428	954	1,460
2	513	259	604	2,920	7,260	24,900	4,450	2,110	1,090	630	714	1,890
3	338	259	476	4,760	7,260	40,700	5,410	1,780	1,200	428	890	1,560
4	243	243	440	24,200	4,760	45,600	5,080	1,360	1,020	338	1,000	1,180
5	195	227	452	37,200	3,570	44,200	4,760	1,360	890	306	830	954
6	167	211	464	37,200	2,800	37,900	7,680	1,200	800	275	700	770
7	153	203	464	34,400	2,330	28,800	11,400	1,090	714	243	500	604
8	139	195	452	29,500	2,440	14,000	9,930	1,060	742	227	404	488
9	125	188	452	15,600	2,560	6,100	6,860	1,020	860	211	380	404
10	115	181	428	4,760	2,110	5,750	5,080	1,000	1,000	195	686	338
11	105	174	416	3,180	2,000	4,760	3,850	988	920	181	920	296
12	100	167	552	2,560	1,780	10,900	3,300	954	905	167	1,070	259
13	211	167	552	2,110	1,670	24,200	3,050	1,090	830	153	845	235
14	211	195	552	3,300	1,360	15,600	2,800	1,130	800	139	604	211
15	174	211	513	7,260	1,890	10,400	2,560	988	728	160	552	195
16	153	211	452	8,550	3,180	7,680	2,440	830	630	1,780	2,800	167
17	167	211	380	5,750	3,850	29,500	2,220	658	500	4,450	3,850	153
18	714	195	348	4,450	3,570	32,300	2,110	578	440	5,750	2,440	139
19	1,780	188	380	4,760	3,850	26,200	1,780	452	714	4,450	1,460	125
20	1,890	181	404	5,080	15,600	15,600	1,670	686	742	3,850	1,020	115
21	3,570	174	464	4,760	23,000	6,860	1,460	578	686	2,560	770	105
22	2,680	181	1,090	14,000	21,000	6,860	1,360	658	742	2,680	604	95
23	1,780	203	3,850	19,800	11,900	6,100	1,180	617	428	3,180	1,000	90
24	1,200	219	5,080	15,600	16,200	21,000	1,070	890	728	3,180	1,090	85
25	860	211	3,300	7,680	18,000	24,200	971	988	672	3,300	2,560	85
26	644	526	2,330	4,450	14,000	22,300	860	890	630	4,150	1,460	115
27	513	714	1,780	3,300	7,680	15,600	770	604	604	3,300	954	380
28	428	714	9,930	2,800	5,410	12,400	714	500	591	3,850	672	488
29	370	644	24,200	2,800	......	10,900	1,140	604	714	2,920	526	770
30	338	552	22,300	7,680	......	7,680	1,890	1,130	476	2,000	428	770
31	296	......	15,000	7,680	......	4,760	......	1,020	......	1,360	526	......
1917-18												
1	500	1,890	180	1,110	42,100	2,920	2,000	2,920	920	4,450	830	890
2	404	1,460	180	1,080	24,200	2,560	1,890	2,560	785	7,260	604	954
3	338	1,060	199	1,050	9,000	2,330	2,680	2,220	785	3,570	476	1,270
4	256	860	218	1,020	4,450	2,000	5,750	2,000	658	1,890	428	860
5	199	714	228	1,020	3,440	2,110	6,470	1,780	565	1,360	317	971
6	159	617	218	1,090	2,680	2,440	5,410	1,560	591	988	266	1,460
7	138	526	208	2,440	2,560	3,570	4,760	1,360	658	714	237	1,670
8	124	452	218	4,150	2,560	6,100	23,000	1,270	617	604	218	1,360
9	110	404	218	4,150	2,440	6,860	24,900	1,670	440	658	199	1,090
10	102	359	218	2,560	2,220	4,760	19,200	2,000	416	845	180	728
11	94	338	208	1,890	2,220	4,760	10,400	2,000	370	686	275	526
12	94	317	218	2,000	2,330	4,150	5,410	1,460	317	500	428	428
13	94	296	210	3,440	2,330	3,570	4,150	3,300	286	428	380	359
14	86	275	210	4,760	2,110	3,180	3,050	18,000	275	338	275	306
15	86	256	200	6,100	1,890	3,050	2,560	16,800	237	296	237	266
16	82	246	200	7,260	1,780	3,050	2,330	9,460	199	256	228	237
17	82	237	200	6,860	1,780	2,680	2,330	4,150	180	218	218	237
18	82	228	200	4,760	1,670	2,330	2,440	2,920	266	180	208	218
19	275	218	200	3,050	1,460	2,110	2,800	2,560	208	190	237	199
20	6,470	208	250	2,220	2,800	1,890	2,920	5,080	180	199	266	208

NOTE.—On the following days the water was over the top of the gage and the gage height was estimated by comparison with the U. S. Weather Bureau reading at Burnside; determinations for single days are subject to considerable error, but the effect on the monthly mean would not be great: 1908, Feb. 11-12, 15-17, Mar. 2-4, 19-20, Apr. 2-4, 26-27; 1909, Jan. 16-18, Feb. 11, 17-18, 24-26, Mar. 9-11, 25-27, Apr. 21-22, May 2, July 14, Aug. 17; 1910, Jan. 8, Feb. 18-19; 1911, Jan. 2-5, Feb. 8-9, Mar. 7-10, Apr. 5-7, 16, May 1-2.

Daily discharge, in second feet, of Cumberland River at Cumberland Falls, Ky. for the years ending September 30, 1907-1911 and 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
21	3,570	199	306	1,890	6,860	2,110	3,850	6,470	1,040	199	338	180
22	2,110	190	359	1,670	6,860	2,800	8,110	4,760	3,300	180	286	218
23	1,360	180	476	1,460	5,080	2,920	7,680	8,110	2,330	180	218	218
24	920	180	604	1,460	3,850	2,800	5,080	7,260	2,000	166	166	199
25	686	180	742	1,460	3,050	4,450	3,570	5,080	1,460	275	138	190
26	578	190	1,560	1,780	3,050	5,080	3,440	3,570	1,890	237	124	173
27	476	180	2,560	19,800	3,300	5,080	3,570	2,560	3,050	180	180	173
28	428	180	2,560	57,500	3,050	3,850	3,180	2,110	2,330	190	218	173
29	380	173	2,330	54,700		3,180	2,920	1,780	1,560	246	199	173
30	552	180	1,740	56,100		2,560	3,050	1,560	2,330	275	338	166
31	630		1,140	56,800		2,220		1,160		742	565	
1918-19												
1	166	18,000	2,920	7,680	1,890	5,080	3,570	5,410	1,890	644	124	86
2	166	10,400	2,220	37,200	1,670	3,850	2,800	7,680	1,560	464	138	90
3	159	3,570	1,890	37,200	1,460	3,180	2,440	10,900	1,270	392	106	110
4	145	2,220	1,460	33,700	1,360	2,800	2,110	6,860	988	317	218	124
5	117	1,780	1,360	26,800	1,360	3,050	1,890	3,850	830	266	359	131
6	102	1,360	1,200	11,900	1,270	14,000	1,780	2,920	714	256	317	124
7	94	1,160	1,060	4,760	1,230	14,000	1,670	2,920	604	208	256	106
8	86	954	954	3,570	1,130	9,460	1,460	3,300	658	286	526	94
9	82	815	890	3,570	1,110	8,550	1,360	3,570	714	296	428	86
10	78	728	860	3,440	1,070	10,400	1,270	3,570	1,130	228	296	78
11	78	658	890	2,920	1,020	9,930	1,560	2,800	890	296	218	70
12	82	591	988	2,560	954	5,750	2,800	2,330	686	338	306	66
13	82	526	1,000	2,330	988	4,150	4,450	2,110	617	256	1,200	62
14	70	500	2,110	2,330	988	3,440	3,850	1,780	578	218	1,270	58
15	68	476	10,400	2,560	1,560	2,920	2,920	1,670	500	218	770	54
16	66	452	15,000	3,050	2,680	2,560	2,920	1,670	428	166	440	50
17	66	604	10,400	3,300	2,680	3,440	4,450	1,780	380	124	348	48
18	102	1,670	4,450	5,080	2,220	6,100	5,410	1,780	338	110	317	47
19	416	1,670	2,920	9,000	2,110	4,760	4,450	1,670	286	138	306	46
20	988	1,780	2,330	8,550	2,000	3,570	3,330	1,780	246	166	246	44
21	2,800	1,780	2,000	5,750	2,110	3,180	2,680	5,750	218	166	208	44
22	2,220	1,670	2,000	4,150	2,680	2,560	2,330	8,550	208	131	173	199
23	1,670	1,460	4,450	4,450	7,260	2,220	2,330	5,410	237	117	152	124
24	1,230	1,270	9,000	9,000	8,110	2,000	2,110	3,570	526	124	124	62
25	1,070	1,160	5,750	9,930	6,470	1,890	1,890	3,850	890	124	110	47
26	1,090	1,060	3,850	7,680	6,100	1,670	1,670	7,680	1,360	124	102	46
27	1,360	971	3,050	4,760	6,470	3,440	1,460	14,000	2,110	110	98	44
28	1,670	937	2,440	3,440	6,100	10,400	1,360	9,460	1,560	94	110	42
29	1,460	1,560	2,220	2,920		11,900	2,000	4,760	1,230	86	117	41
30	4,150	3,180	1,890	2,440		6,860	4,150	3,050	890	78	102	44
31	17,400		1,780	2,110		4,450		2,560		78	94	
1919-20												
1	50	14,500	5,750	1,250	2,440	3,050	3,850	3,850	1,040	552	237	1,890
2	50	26,200	5,410	1,460	2,220	2,800	26,200	4,150	800	488	199	1,560
3	50	21,700	3,850	1,460	1,890	2,680	30,900	3,850	756	440	199	1,220
4	52	16,200	2,800	1,270	9,930	2,560	23,000	3,440	2,800	591	275	988
5	78	5,750	2,330	1,130	15,600	3,440	12,400	2,920	5,750	700	338	830
6	199	2,800	2,220	937	9,930	5,750	7,260	2,560	6,860	604	338	742
7	138	2,110	5,750	1,060	6,470	6,100	5,750	2,330	5,750	500	452	672
8	82	1,670	13,400	2,000	4,760	4,760	5,410	2,330	3,440	452	552	630
9	68	1,360	14,500	8,110	3,850	3,440	5,410	2,220	2,330	428	770	617
10	62	1,160	10,900	7,680	3,300	2,920	4,450	2,110	1,890	500	1,560	742
11	70	1,460	8,550	6,860	3,050	2,880	3,570	2,000	1,360	539	1,670	630
12	2,110	2,330	7,260	4,760	2,800	11,400	3,050	1,780	1,180	500	2,440	7,260

Daily discharge, in second feet, of Cumberland river at Cumberland Falls, Ky. for the years ending September 30, 1907-1911 and 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1919-20												
13	5,080	2,440	6,470	3,570	2,920	28,200	2,800	1,670	1,040	604	3,850	16,200
14	5,750	2,440	17,400	2,800	2,920	25,600	2,680	1,560	905	552	3,850	10,400
15	4,450	2,560	18,000	2,330	2,800	19,800	2,440	1,460	770	552	9,460	7,260
16	11,900	2,330	13,400	2,330	2,560	9,930	2,110	1,270	644	830	9,460	4,450
17	14,500	1,890	6,860	3,050	2,330	6,470	2,110	1,160	539	3,050	7,260	3,440
18	12,400	1,670	4,450	3,300	2,110	7,680	2,110	1,090	452	2,330	4,150	2,560
19	5,080	1,360	3,570	3,440	2,330	18,600	1,890	1,090	404	1,890	3,050	2,000
20	2,560	1,180	2,920	3,180	2,330	23,000	1,890	1,130	672	3,850	2,800	1,460
21	1,670	1,000	2,440	7,680	2,110	19,200	2,920	1,090	3,050	3,440	3,050	1,270
22	1,270	920	2,110	28,200	12,400	12,900	2,920	1,020	4,450	2,110	9,000	1,060
23	1,780	830	2,000	43,500	22,300	5,080	2,680	890	3,850	1,360	8,550	860
24	9,000	742	1,780	41,400	18,000	4,150	2,440	800	2,560	954	5,080	742
25	9,930	686	1,670	36,500	10,900	3,300	2,330	2,330	2,000	728	3,440	672
26	6,470	1,560	1,460	30,200	7,260	2,920	3,440	2,680	1,360	526	2,560	617
27	3,850	5,750	1,360	22,300	4,760	2,560	5,080	2,560	1,090	452	2,110	630
28	2,560	7,260	1,270	8,110	3,850	2,330	5,410	2,220	860	416	1,890	728
29	1,780	6,100	1,270	4,450	3,440	2,220	4,450	1,670	742	359	1,560	728
30	1,360	5,080	1,250	3,300		2,110	3,570	1,360	630	317	1,270	728
31	1,160		1,160	2,920		1,890		1,250		275	1,270	

Monthly discharge of Cumberland River at Cumberland Falls, Ky., for years ending September 30, 1907-1911, and 1915-1920.

(Drainage area, 2,040 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1907					
August 15-31	3,190	212	1,120	0.549	0.35
September	11,400	219	2,410	1.18	1.32
1907-1908					
October	2,600	153	610	.299	.34
November	16,400	186	4,280	2.10	2.34
December	16,400	637	2,250	1.10	1.27
January	12,300	1,830	4,940	2.42	2.79
February	25,000	2,260	8,530	4.18	4.51
March	19,200	3,700	8,470	4.15	4.78
April	19,200	2,040	7,220	3.54	3.95
May	8,130	950	3,230	1.58	1.82
June	1,280	100	501	.246	.27
July	4,830	219	1,120	.549	.63
August	776	173	284	.139	.16
September	3,190	58	443	.217	.24
The year	25,000	58	3,470	1.70	23.10

Monthly discharge of Cumberland River at Cumberland Falls, Ky., for years ending September 30, 1907-1911, and 1915-1920.—Continued.

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1908-1909					
October	96	55	66.1	0.032	0.04
November	822	80	230	.113	.13
December	7,050	193	2,470	1.21	1.40
January	25,000	2,040	5,570	2.73	3.15
February	37,600	1,540	10,800	5.29	5.51
March	28,000	2,710	10,700	5.25	5.86
April	22,100	2,480	6,810	3.34	3.73
May	22,100	882	3,400	1.67	1.92
June	8,900	870	4,580	2.25	2.51
July	19,200	227	4,930	2.42	2.79
August	19,200	166	1,870	.917	1.06
September	260	126	167	.082	.09
The year	37,600	55	4,240	2.08	28.19
1909-10					
October	251	100	169	.083	.10
November	572	132	263	.129	.14
December	1,450	268	863	.423	.49
January	31,200	496	5,830	2.86	3.30
February	22,100	1,280	4,980	2.44	2.54
March	8,510	748	2,420	1.19	1.37
April	11,800	678	4,510	2.21	2.47
May	13,800	2,830	6,620	3.25	3.75
June	8,130	982	3,240	1.59	1.77
July	8,130	902	4,020	1.97	2.27
August	6,060	193	2,030	.995	1.15
September	6,710	193	2,490	1.22	1.36
The year	31,200	100	3,110	1.52	20.71
1910-11					
October	1,940	179	501	.246	.28
November	3,440	148	362	.177	.20
December	7,400	664	2,270	1.11	1.28
January	34,400	2,260	7,670	3.76	4.34
February	28,000	2,480	6,920	3.39	3.53
March	37,600	1,830	6,900	3.38	3.90
April	44,300	2,040	9,210	4.51	5.03
May	47,600	585	4,940	2.42	2.79
June	2,950	153	599	.294	.33
July	1,940	320	1,010	.495	.57
August	2,480	186	840	.412	.48
September	790	111	340	.167	.19
The year	47,600	111	3,440	.169	22.92
1911					
October	7,050	186	1,510	.740	.85
November	7,050	199	2,360	1.16	1.29
December 1-10	1,730	546	972	.476	.18
1915					
April	2,800	644	1,210	0.593	0.66
May	14,000	452	2,290	1.12	1.29
June	9,400	591	2,910	1.43	1.60
July	21,700	404	3,300	1.62	1.87
August	9,930	338	2,600	1.27	1.46
September	2,440	317	993	.487	.54

Monthly discharge of Cumberland River at Cumberland Falls, Ky., for years ending September 30, 1907-1911, and 1915-1920.—Continued.

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1915-16					
October	18,000	526	3,180	1.56	1.80
November	30,200	338	4,940	2.42	2.70
December	43,500	1,100	10,500	5.15	5.94
January	28,800	2,680	9,680	4.75	5.48
February	9,460	1,460	4,350	2.13	2.30
March	9,930	1,560	4,350	2.13	2.46
April	7,680	1,460	3,020	1.48	1.65
May	4,150	317	1,030	.505	.58
June	3,850	565	1,780	.873	.97
July	6,100	338	1,350	.662	.76
August	9,460	380	2,110	1.03	1.19
September	988	146	297	.146	.16
The year	43,500	146	3,900	1.91	25.99
1916-17					
October	3,570	100	656	.322	.37
November	714	167	276	.135	.15
December	24,200	348	3,180	1.56	1.80
January	37,200	2,110	10,700	5.25	6.05
February	23,000	1,360	7,080	3.47	3.61
March	45,600	4,760	18,500	9.07	10.46
April	11,400	714	3,390	1.66	1.85
May	2,440	452	1,010	.495	.57
June	1,200	428	752	.369	.41
July	5,750	139	1,830	.897	1.03
August	3,850	380	1,070	.525	.61
September	1,890	85	484	.237	.26
The year	45,600	85	4,090	2.00	27.17
1917-18					
October	6,470	82	692	0.339	0.39
November	1,890	173	426	.209	.23
December	2,560	180	599	.294	.34
January	57,500	1,020	10,200	5.00	5.76
February	42,100	1,460	5,400	2.65	2.76
March	6,860	1,890	3,340	1.64	1.89
April	24,900	1,890	5,960	2.92	3.26
May	18,000	1,160	4,180	2.05	2.36
June	3,300	180	1,010	.495	.55
July	7,260	166	919	.450	.52
August	830	124	299	.147	.17
September	1,670	166	537	.263	.29
The year	57,500	82	2,790	1.37	18.52
1918-19					
October	17,400	66	1,270	0.623	0.72
November	18,000	452	2,170	1.06	1.18
December	15,000	860	3.350	1.64	1.89
January	37,200	2,110	8,650	4.24	4.89
February	8,110	954	2,720	1.33	1.38
March	14,000	1,670	5,530	2.71	3.12
April	5,410	1,270	2,610	1.28	1.43
May	14,000	1,670	4,480	2.20	2.54
June	2,110	208	818	.401	.45
July	644	78	214	.105	.12
August	1,270	94	309	.151	.17
September	199	41	75.6	.037	.04
The year	37,200	41	2.700	1.32	17.93

Monthly discharge of Cumberland River at Cumberland Falls, Ky., for years ending September 30, 1907-1911, and 1915-1920.—Continued.

Month	Discharge in Second-feet				Run-off depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1919-20					
October	14,500	50	3,410	1.67	1.92
November	26,200	686	4,770	2.34	2.61
December	18,000	1,160	5,600	2.75	3.17
January	43,500	937	9,370	4.59	5.29
February	22,300	1,890	5,920	2.90	3.13
March	28,200	1,890	8,060	3.95	4.55
April	30,900	1,890	6,150	3.01	3.36
May	4,150	800	1,990	.975	1.12
June	6,860	404	2,000	.980	1.09
July	3,850	275	996	.488	.56
August	9,460	199	2,990	1.47	1.70
September	16,200	617	2,450	1.20	1.34
The year	43,500	50	4,470	2.19	29.84

CUMBERLAND RIVER AT BURNSIDE, KY.

LOCATION.—Below mouth of South Fork of Cumberland River, at Burnside, Pulaski County.

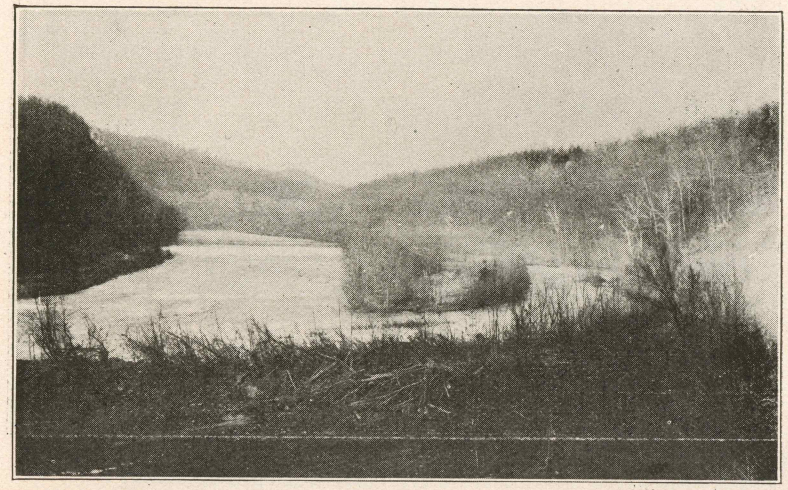
DRAINAGE AREA.—4,890 square miles (measured on maps of Kentucky and Tennessee, prepared by United States Geological Survey on scale 1:500,000).

RECORDS AVAILABLE.—October 1, 1914, to September 30, 1920.

GAGE.—Vertical staff in two sections on piers of toll bridge across South Fork of Cumberland River about 700 feet above mouth; installed in July, 1914, by United States Weather Bureau. Readings on this gage by the Weather Bureau began January 1, 1915. Sea-level elevation of zero, 589.53 ft. (Smith Shoals Survey datum, United States Engineer Corps), this datum being same as that of gage which was marked on the rails of inclines 1 and 2 leading from the South Fork to the warehouse, about 500 feet below the present gage, and which was established in 1884 and read daily until January 1, 1915. Upper part of old gage, reading from 54 to 71 feet, was spiked to office of Col. Cole. The United States Weather Bureau reports that "the old river gage was changed on several unknown dates and by amounts that are uncertain, so that readings prior to January 1, 1915, are not comparable by from 0.1 to 0.7 foot." New gage is read for the United States Geological Survey by L. M. Cheeley.

DISCHARGE MEASUREMENTS.—Flow of South Fork is measured from the highway bridge; the Cumberland above the South Fork is measured from a boat, from the Queen & Crescent Railroad bridge, or by means of floats, the method used depending on the stage; flow below the South Fork is the combined flow of both streams.

CHANNEL AND CONTROL.—Channel considered permanent except for deposits of mud, which are washed away at high stages. Low-water control is crest of dam No. 21, 28 miles below Burnside; gage height of crest of dam, 1.47 feet. The dam



Mill Shoals, Cumberland River near Burnside, Ky., Feb. 9, 1915.

is a concrete structure, and probably little or no water leaks through dam or lock.

EXTREMES OF DISCHARGE.—Maximum stage recorded during period 1915-1920, 69.5 feet, January 29, 1918 (discharge 165,000 second-feet); minimum stage recorded 1.8 feet, September 18-21, 1919, (discharge 115 second-feet).

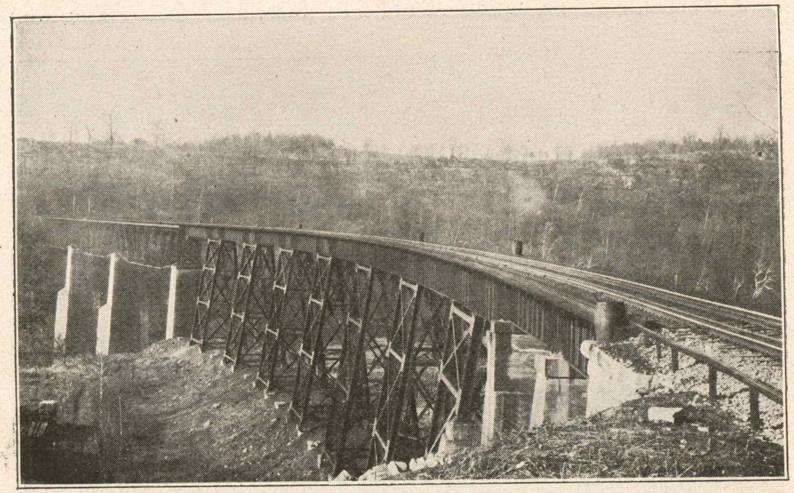
Maximum stage recorded 69.5 feet January 29, 1918, minimum stage recorded, 1.6 feet November 8-9, 1895; lowest stage possible at present unless pool No. 21 is lowered, 1.47 feet.

ICE.—Stage-discharge relation seldom affected by ice.

REGULATION.—Stage at low-water will be affected by any manipulation of the level of pool No. 21 at the lock.

COOPERATION.—Station maintained in cooperation with the Kentucky Geological Survey.

ACCURACY.—Stage-discharge relation practically permanent owing to lock and dam No. 21. Rating curve well defined below 25,000 second-feet but is simply extended above that point. High-water discharges are open to considerable doubt and later measurements may require revision of these estimates. Low and medium stages however should be fairly accurate.



C. N. O. & T. P. Ry. bridge, Cumberland River at Burnside, Ky., Feb. 9, 1915. Discharge measurements are made from this bridge.

Discharge measurements of Cumberland River at Burnside, Ky., during period 1915-1920.

Date	Made by—	Gage Height	Discharge	Date	Made by—	Gage Height	Discharge
1915				1917			
Mar. 3	Ellsworth & Sellier	3.84	2,320	July 13	B. E. Jones	2.02	270
1916				1918			
Apr. 26	A. H. Horton	5.06	3,390	Apr. 11	Peterson & Hopkins	17.57	24,200
Sept. 11	B. E. Jones	2.41	571	June 17	Hopkins & Kidwell	2.44	552
1917				1920			
Jan. 10	B. E. Jones	11.94	12,400	May 12	W. R. King	6.80	6,540
11	B. E. Jones	8.63	8,380				

Daily gage height, in feet, of Cumberland River at Burnside, Ky., for the years ending September 30, 1915-1920.

Day	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915								
1	....	4.18	6.76	3.56	8.62	7.64	2.68	7.09
2	....	4.00	6.27	3.42	7.74	8.19	2.75	5.81
3	....	3.88	5.84	3.58	8.15	6.66	3.02	4.90
4	....	3.78	5.46	5.73	10.08	6.34	3.96	4.28
5	....	4.14	5.20	7.36	7.89	11.24	4.16	4.60
6	....	6.72	4.92	6.48	6.37	12.42	3.66	6.72
7	....	8.63	4.69	5.65	6.30	10.34	3.22	7.90
8	....	7.96	4.50	5.12	10.32	8.48	2.92	6.42
9	....	7.10	4.37	4.82	10.45	7.14	2.81	5.50
10	....	6.48	4.22	4.46	8.71	6.24	2.90	4.68
11	....	5.98	4.48	4.08	6.83	6.22	3.26	4.15
12	....	5.58	5.02	3.75	5.59	8.62	7.18	3.80
13	....	5.20	5.82	3.56	5.04	12.50	6.90	3.46
14	....	4.94	5.66	3.42	4.72	20.74	6.50	3.18
15	....	4.70	5.35	3.30	5.66	17.06	6.04	2.99
16	....	4.92	5.00	3.20	10.90	11.90	6.24	2.89
17	....	6.04	4.67	3.00	12.96	8.70	5.20	2.76
18	....	7.46	4.49	2.86	9.84	7.18	6.48	2.70
19	5.95	9.72	4.27	2.74	7.84	6.01	10.05	2.63
20	5.68	14.38	4.12	2.67	6.87	5.54	8.70	2.50
21	5.40	15.44	3.96	2.70	8.38	10.19	8.59	2.78
22	5.15	13.47	3.84	2.70	11.04	9.45	9.14	3.10
23	4.95	11.82	3.76	3.79	9.60	7.20	7.50	3.70
24	4.78	11.12	3.62	10.17	7.62	5.60	5.85	3.49
25	4.70	11.05	3.52	8.29	5.99	4.64	4.78	3.16
26	4.65	10.96	3.44	6.76	4.89	3.91	4.08	2.93
27	4.48	10.19	3.41	12.40	4.33	3.54	3.82	2.78
28	4.30	9.87	3.39	16.62	3.74	3.22	10.92	2.66
29	....	9.28	3.37	15.28	3.86	2.96	13.74	2.58
30	....	8.21	3.56	13.64	4.70	2.84	11.03	4.73
31	....	7.30	....	9.63	....	2.73	8.93	....

Daily gage height, in feet, of Cumberland River at Burnside, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	17.00	3.33	7.50	22.58	10.70	7.20	10.03	5.40	10.70	2.85	3.57	2.53
2	22.30	3.25	6.82	23.00	14.85	8.60	8.91	5.12	7.77	2.72	3.11	2.69
3	16.94	3.15	6.42	23.30	15.09	12.65	8.00	4.92	6.00	2.56	4.06	2.69
4	12.68	3.04	6.00	18.38	13.04	13.40	7.36	5.91	5.10	2.46	4.51	2.62
5	11.52	3.03	5.80	14.47	11.31	12.24	6.93	7.74	4.37	2.45	5.98	2.73
6	14.28	2.92	5.34	12.56	10.55	10.85	6.28	6.67	4.11	2.37	5.09	2.74
7	11.34	2.85	5.04	18.30	10.55	11.05	5.82	5.91	4.76	2.35	5.15	2.63
8	8.78	2.84	4.74	35.30	10.32	14.64	8.15	5.16	6.73	2.33	8.17	2.55
9	7.06	2.87	4.54	27.20	10.32	14.94	13.30	4.77	6.72	2.40	9.48	2.45
10	6.00	3.57	4.38	19.85	13.35	12.98	13.65	4.37	5.80	3.15	8.50	2.43
11	5.02	3.85	4.28	15.81	14.70	10.80	12.18	4.06	5.10	5.55	5.96	2.45
12	4.59	3.72	5.20	21.42	13.55	9.43	10.52	3.81	5.07	5.10	5.45	2.36
13	4.22	5.02	6.70	26.07	11.90	8.02	9.45	3.59	8.41	5.44	8.41	2.45
14	3.92	9.20	7.35	30.56	10.40	7.35	8.48	3.45	8.22	4.83	7.16	2.59
15	3.68	40.40	7.38	21.30	8.85	6.90	7.71	3.32	6.92	4.06	7.03	2.61
16	3.56	41.80	14.80	15.65	7.89	6.89	7.13	3.35	6.24	3.75	10.42	2.47

Daily gage height, in feet, of Cumberland River at Burnside, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
17	3.54	26.75	32.80	12.85	7.38	6.67	7.06	3.35	6.12	3.67	11.93	2.43
18	3.54	16.70	48.18	10.82	7.00	6.29	6.06	3.22	6.54	4.24	9.57	3.15
19	4.64	18.71	46.40	9.10	6.70	6.10	5.69	3.03	6.08	4.79	7.94	2.89
20	16.68	22.51	36.28	8.30	6.25	5.84	5.26	2.91	5.45	6.77	6.50	2.65
21	12.23	17.34	26.81	8.20	5.84	5.69	5.05	2.84	4.92	8.86	5.18	2.43
22	8.38	13.60	19.14	10.60	5.45	5.75	5.05	2.85	4.41	10.76	4.43	2.23
23	6.58	10.70	12.05	20.95	5.27	5.62	5.13	2.89	4.06	10.83	3.95	2.43
24	5.70	8.92	9.04	20.55	5.55	5.38	5.12	3.07	3.71	7.86	3.69	2.32
25	4.92	7.69	8.68	16.04	6.97	5.15	5.20	3.51	3.45	5.92	3.43	2.29
26	4.46	6.80	11.00	12.55	7.88	5.20	5.06	3.54	3.33	5.03	3.43	2.25
27	4.08	6.41	14.64	10.62	8.21	7.00	5.10	3.47	3.18	4.61	3.17	2.17
28	3.86	7.10	15.35	9.10	8.19	12.55	5.33	3.35	3.11	4.36	2.99	2.16
29	3.74	9.25	27.80	8.62	7.60	15.81	5.40	3.07	3.05	3.65	2.87	2.81
30	3.65	8.38	38.59	8.92	....	13.74	5.44	5.67	3.00	3.32	2.81	2.53
31	3.49	....	28.55	8.60	....	11.50	....	16.06	....	4.05	2.53	....
1916-17												
1	2.4	2.6	3.0	14.0	15.4	13.2	9.9	5.5	4.3	2.5	4.9	2.8
2	2.4	2.5	3.0	9.2	17.3	26.8	10.2	5.9	4.1	2.5	4.1	3.6
3	2.4	2.5	2.9	8.0	14.2	39.1	16.3	5.4	6.4	2.4	3.9	4.5
4	2.5	2.4	2.8	18.6	11.7	45.3	14.4	4.8	6.0	2.4	3.8	4.4
5	2.4	2.4	2.8	50.7	9.9	44.0	12.6	5.0	5.0	2.4	3.6	4.2
6	2.3	2.4	3.0	49.8	8.0	35.6	18.6	4.9	4.3	2.3	3.4	3.7
7	2.2	2.4	3.2	38.3	7.3	28.8	20.1	4.7	3.9	2.2	3.2	3.3
8	2.2	2.4	3.3	29.0	6.7	25.4	17.2	4.5	3.6	2.2	2.9	2.8
9	2.1	2.3	3.3	21.8	6.8	20.0	15.1	4.4	3.6	2.2	2.8	2.8
10	2.1	2.3	3.3	13.8	6.7	14.9	12.7	4.3	4.3	2.2	2.8	2.7
11	2.1	2.3	3.3	9.3	6.0	12.3	10.6	4.2	5.2	2.2	3.4	2.6
12	2.1	2.3	3.3	7.7	5.5	12.5	9.2	4.1	5.1	2.1	3.5	2.5
13	2.1	2.3	3.3	6.6	5.0	27.6	8.9	4.0	4.5	2.0	3.5	2.3
14	2.1	2.3	3.3	7.2	4.8	23.9	8.8	4.0	4.0	2.0	3.3	2.3
15	2.2	2.4	3.3	11.0	5.1	19.8	8.3	4.0	3.8	2.0	3.0	2.3
16	2.3	2.4	3.2	14.0	8.8	16.5	7.5	3.9	3.5	8.5	3.5	2.3
17	3.3	2.3	3.0	12.7	10.8	25.0	6.9	3.6	3.2	6.9	8.6	2.2
18	3.4	2.3	3.0	10.3	10.1	42.3	6.4	3.5	3.1	13.5	7.0	2.2
19	5.3	2.4	3.0	9.9	9.5	31.2	5.9	3.4	2.9	10.7	5.7	2.2
20	8.0	2.3	2.9	10.8	22.5	22.0	5.6	3.3	2.8	9.5	4.7	2.1
21	8.4	2.3	3.2	10.6	33.1	15.5	5.3	3.0	2.8	7.6	3.9	2.1
22	8.2	2.3	4.6	20.2	26.0	15.4	5.0	3.0	2.9	10.0	3.8	2.1
23	6.6	2.4	9.4	35.4	19.5	15.1	4.7	3.0	2.9	10.0	6.2	2.0
24	4.8	2.8	10.1	23.4	18.9	21.5	4.5	3.5	2.8	10.4	5.5	2.0
25	4.0	2.8	8.9	16.7	26.0	32.0	4.3	3.8	2.8	11.2	4.8	2.0
26	3.6	3.0	7.2	12.0	20.0	24.7	4.2	3.7	2.7	9.2	4.7	2.0
27	3.3	3.1	6.1	9.7	15.5	20.2	4.0	3.5	2.5	8.6	4.0	2.0
28	3.0	3.2	12.2	8.3	12.1	22.5	3.9	3.9	2.4	9.3	3.5	4.1
29	2.9	3.4	36.5	8.1	....	18.7	3.8	4.9	2.4	9.5	3.2	4.3
30	2.8	3.1	27.9	12.8	....	15.2	4.8	5.7	2.4	7.4	3.0	4.2
31	2.7	....	19.3	15.7	....	12.0	....	4.9	....	5.9	2.8	....
1917-18												
1	3.46	5.54	2.37	5.20	35.70	7.42	5.88	8.42	4.17	6.72	3.64	2.78
2	3.19	5.25	2.57	5.20	25.95	6.92	5.58	7.35	3.77	7.35	3.73	3.18
3	2.84	4.63	2.65	5.20	18.05	6.55	6.18	6.72	3.75	7.10	3.20	3.48
4	2.73	4.19	2.75	5.2	12.08	6.65	12.48	6.10	3.59	5.48	2.98	4.48
5	2.57	3.75	2.79	5.2	9.82	8.45	13.92	5.70	3.37	4.20	2.76	5.72
6	2.49	3.48	2.76	4.67	8.16	10.85	11.75	5.25	3.37	3.63	2.58	8.28
7	2.42	3.32	2.75	6.2	7.78	11.88	10.15	4.87	3.37	3.18	2.54	7.25
8	2.35	3.21	2.77	9.95	8.58	12.28	29.55	4.77	3.47	2.93	2.38	5.30
9	2.27	3.09	2.77	9.52	9.72	11.48	32.65	5.45	3.42	2.92	2.40	4.06

Daily gage height, in feet, of Cumberland River at Burnside, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
10	2.19	2.99	2.77	8.18	10.30	11.00	24.00	8.00	3.12	2.93	2.38	3.50
11	2.09	2.87	2.8	6.58	9.10	9.72	17.38	6.50	2.95	3.16	2.37	3.04
12	2.12	2.81	2.9	7.8	8.28	9.12	13.08	6.10	2.85	3.00	2.33	2.93
13	2.19	2.77	3.0	11.45	7.71	8.45	10.02	8.45	2.77	2.80	2.33	2.83
14	2.25	2.76	3.0	10.90	7.31	7.94	8.60	23.10	2.65	2.63	2.33	2.56
15	2.17	2.72	3.0	15.10	6.88	7.40	7.25	23.15	2.57	2.46	2.30	2.48
16	2.19	2.71	2.67	18.20	6.72	7.05	6.72	15.90	2.52	2.38	2.28	2.38
17	2.17	2.67	2.9	15.22	6.55	6.80	7.05	10.45	2.42	2.38	2.28	2.38
18	2.52	2.67	2.9	11.35	6.16	6.28	7.85	8.28	2.38	2.33	2.33	2.33
19	6.35	2.57	3.0	9.35	5.82	5.84	7.88	7.02	2.43	2.33	2.58	2.36
20	7.92	2.56	3.1	8.00	12.92	5.62	7.35	7.32	2.56	2.26	2.40	2.46
21	11.00	2.52	3.1	7.30	19.82	5.78	9.30	14.08	2.58	2.18	2.38	2.46
22	6.82	2.52	3.2	7.30	16.78	6.25	15.08	12.75	3.88	2.22	2.38	2.43
23	5.35	2.51	3.47	7.30	12.55	6.60	13.60	13.60	5.80	2.27	2.37	2.38
24	4.29	2.47	3.81	6.65	10.58	6.70	11.42	20.42	4.93	2.27	2.28	2.38
25	3.77	2.42	4.05	5.90	8.92	10.70	9.38	13.32	4.56	2.29	2.23	2.38
26	3.33	2.39	5.92	5.84	8.40	11.28	8.62	9.98	4.38	2.33	2.18	2.30
27	3.25	2.37	6.72	19.30	8.25	10.15	11.08	8.08	5.30	2.33	2.20	2.28
28	3.07	2.37	7.26	53.20	7.92	9.24	11.60	7.02	5.35	2.48	2.36	2.20
29	3.32	2.35	6.70	66.60	....	8.02	10.02	6.02	5.00	2.86	2.50	2.13
30	4.08	2.32	5.97	47.88	....	7.02	8.85	5.20	5.10	3.18	2.43	2.10
31	4.85	....	5.50	44.15	....	6.32	....	4.62	....	3.26	2.56	....
1918-19												
1	2.3	20.8	6.7	18.3	6.1	11.4	9.0	12.7	6.0	3.4	2.4	2.3
2	2.3	16.0	6.2	53.9	5.8	10.0	7.8	14.9	5.3	3.1	3.0	2.2
3	2.3	11.3	5.4	53.6	5.2	8.9	6.9	14.8	4.8	2.9	3.0	2.2
4	2.3	7.3	4.9	37.7	5.0	7.9	6.2	13.2	4.4	2.7	2.6	2.1
5	2.1	6.0	4.5	26.5	5.0	7.4	5.9	10.2	4.0	2.6	2.5	2.1
6	2.3	5.0	4.2	20.4	4.9	12.9	5.7	8.3	3.7	2.6	3.1	2.1
7	2.1	4.3	4.0	12.7	4.7	21.9	5.4	8.1	3.5	2.5	5.0	2.1
8	2.1	4.0	3.9	9.4	4.4	17.0	5.0	8.2	3.4	2.6	3.8	2.1
9	2.1	3.6	3.7	9.0	4.4	15.1	4.9	12.2	4.6	2.6	2.6	2.1
10	2.1	3.6	3.6	8.9	4.4	19.2	4.8	16.6	5.0	2.9	2.6	2.1
11	2.1	3.6	3.6	8.2	4.3	16.7	5.5	14.9	4.5	2.8	2.4	2.1
12	2.4	3.5	4.6	7.1	4.1	13.7	7.6	11.2	4.0	2.7	2.6	2.0
13	2.4	3.5	4.7	7.0	4.1	11.0	9.1	8.7	4.0	2.7	2.6	2.0
14	2.4	3.4	4.8	6.8	4.1	9.2	9.0	7.3	3.9	2.6	2.9	2.0
15	2.2	3.3	11.2	6.8	4.4	8.5	7.9	6.6	3.8	2.5	3.6	2.0
16	2.2	3.3	17.4	6.9	5.4	8.0	7.1	6.1	3.6	2.5	3.1	2.0
17	2.1	3.6	15.7	7.4	6.0	7.5	8.4	5.7	3.3	2.5	2.8	1.9
18	2.3	6.6	11.7	9.5	5.7	16.0	11.1	5.8	3.0	2.0	2.6	1.8
19	2.1	9.2	8.3	16.0	5.4	15.2	10.2	5.7	2.9	2.3	2.6	1.8
20	3.2	8.0	6.7	15.7	5.2	11.7	8.8	5.6	2.9	2.5	2.5	1.8
21	5.7	6.9	6.0	13.2	5.4	9.7	7.4	7.6	2.8	2.4	2.4	1.8
22	7.3	6.0	6.4	10.7	6.2	8.5	6.5	11.7	2.8	2.3	2.3	2.0
23	5.7	5.6	8.7	9.0	10.1	7.5	6.3	12.0	2.1	2.3	2.4	2.3
24	4.8	5.0	12.3	16.8	13.6	7.0	6.2	11.0	2.4	2.2	2.2	2.5
25	3.7	4.7	12.9	18.7	12.4	6.3	5.7	10.8	3.4	2.1	2.1	2.4
26	3.8	4.4	11.0	15.1	13.1	5.8	5.1	19.5	5.0	2.1	2.1	1.4
27	4.3	4.0	9.1	12.5	13.5	5.8	4.9	16.8	4.5	2.1	2.1	1.3
28	4.4	4.0	7.8	10.0	12.5	12.7	4.7	15.9	4.6	2.1	2.1	1.3
29	4.9	4.3	6.9	8.6	....	15.7	4.6	12.0	3.7	2.1	2.2	1.3
30	5.5	5.6	6.3	7.5	....	13.4	6.3	8.7	3.7	2.9	2.3	1.6
31	15.5	....	5.6	6.8	....	10.7	....	7.1	....	2.9	2.4	....

Daily gage height, in feet, of Cumberland River at Burnside, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1919-20												
1	1.6	7.5	15.5	4.9	7.5	8.4	7.4	12.4	4.5	3.0	2.4	4.5
2	1.9	41.4	13.3	5.1	6.5	7.7	26.7	12.0	4.2	2.9	2.6	4.4
3	1.9	34.5	13.0	5.0	6.0	7.5	41.0	10.7	4.8	2.9	2.4	4.4
4	1.9	22.3	10.0	4.9	6.4	7.2	28.8	10.7	8.1	2.9	2.4	4.0
5	1.9	15.4	7.8	4.7	27.0	9.0	23.0	9.5	20.0	2.9	2.3	3.6
6	2.1	9.8	7.0	4.5	20.8	13.7	17.1	8.4	21.0	3.0	2.3	3.5
7	2.6	7.3	21.0	4.1	15.0	12.5	14.5	7.9	14.0	3.6	2.3	3.3
8	2.9	6.0	30.0	4.6	11.5	11.0	12.4	10.5	10.4	3.8	2.5	3.2
9	2.7	5.5	22.8	26.0	10.1	9.8	11.1	11.4	7.9	3.8	2.9	3.1
10	2.0	5.0	19.5	31.5	8.8	8.5	10.5	9.1	6.4	3.3	3.3	3.1
11	1.8	5.2	18.1	19.5	8.5	7.7	9.2	7.6	5.3	3.1	6.1	3.2
12	3.5	8.2	15.0	13.0	8.4	9.9	8.3	6.7	4.6	3.1	6.0	7.0
13	11.5	9.9	13.0	10.5	7.9	36.0	7.7	6.1	4.2	3.1	7.0	14.5
14	10.5	8.5	32.0	9.0	7.7	26.5	7.3	7.4	3.8	3.1	12.1	16.4
15	11.5	7.5	31.3	8.0	7.4	21.2	7.0	6.1	3.6	3.0	12.0	13.4
16	19.0	7.0	21.0	7.1	7.0	17.0	6.5	5.8	3.5	3.0	15.9	11.7
17	24.0	6.2	16.0	8.0	6.8	16.1	6.1	5.0	3.2	2.9	13.1	8.6
18	19.8	5.6	12.0	8.5	6.6	16.1	7.0	4.7	3.1	5.0	9.8	7.1
19	16.0	5.0	10.0	8.3	6.0	22.5	7.0	4.9	2.9	4.9	9.0	5.9
20	9.1	4.8	8.9	7.9	5.8	36.0	6.5	4.9	2.8	5.5	7.2	4.9
21	6.6	4.2	7.8	9.0	6.0	26.0	6.9	4.7	4.0	6.4	6.2	4.3
22	5.5	4.0	7.0	37.5	20.3	18.8	12.0	4.5	9.9	5.8	7.0	3.9
23	5.0	3.8	6.5	45.9	33.0	13.2	10.2	4.5	9.5	4.5	11.0	3.6
24	11.7	3.7	6.0	50.2	23.0	10.2	8.6	4.5	7.6	3.8	10.5	3.5
25	17.3	3.6	5.8	45.0	20.6	8.7	7.0	4.4	5.9	3.3	7.4	4.9
26	14.0	8.5	5.6	35.0	16.6	8.2	7.0	6.5	4.8	3.1	6.2	4.5
27	10.9	31.0	5.1	26.0	11.8	7.7	11.4	7.1	4.0	2.9	5.3	4.2
28	8.0	24.4	5.0	17.6	10.3	7.0	12.0	6.2	3.6	2.8	4.8	5.0
29	6.5	15.6	5.0	11.8	8.7	6.8	11.2	5.5	3.4	2.6	4.5	4.0
30	5.4	15.6	4.9	9.5	....	6.7	9.7	4.8	3.1	2.4	4.0	3.8
31	4.8	....	4.7	8.1	....	6.2	....	4.4	....	2.4	3.6	....
1914-15												
1	510	1,230	1,230	28,500	23,000	2,580	5,570	1,890	7,820	6,500	900	5,920
2	350	1,230	1,450	17,900	74,000	2,350	5,000	1,670	6,620	7,260	955	4,420
3	350	1,010	1,450	10,900	50,700	2,240	4,420	1,890	7,260	5,460	1,230	3,380
4	350	800	2,580	7,960	29,400	2,120	4,080	4,300	10,100	5,000	2,350	2,700
5	280	700	7,540	6,380	19,700	2,460	3,730	6,260	6,870	11,800	2,580	3,040
6	280	700	24,800	5,340	19,900	5,460	3,380	5,220	5,110	13,900	2,000	5,460
7	150	700	19,700	9,300	17,600	7,820	3,160	4,190	5,000	10,400	1,450	6,870
8	150	700	11,300	18,500	13,200	7,000	2,920	3,620	10,400	7,680	1,120	5,110
9	150	700	6,030	17,800	10,400	5,920	2,810	3,270	10,500	5,920	1,010	4,080
10	280	700	5,680	12,700	8,400	5,220	2,580	2,920	7,960	4,880	1,120	3,160
11	510	700	4,540	9,300	7,000	4,650	2,920	2,460	5,570	4,880	1,560	2,580
12	1,010	700	3,730	22,200	5,800	4,190	3,500	2,120	4,190	7,820	6,030	2,120
13	1,450	700	3,500	48,600	5,340	3,730	4,420	1,890	3,500	14,100	5,680	1,780
14	3,960	700	3,380	32,400	4,650	3,380	4,300	1,670	3,160	31,000	5,220	1,450
15	6,260	700	3,160	21,100	4,650	3,160	3,960	1,560	4,300	23,000	4,650	1,230
16	47,300	700	2,920	14,600	4,650	3,380	3,500	2,450	11,300	13,000	4,880	1,120
17	29,600	700	2,580	11,300	5,110	4,650	3,160	1,230	15,000	7,960	3,730	955
18	15,900	700	2,350	14,500	4,650	6,380	2,920	1,060	9,600	6,030	5,220	900
19	15,500	700	2,700	55,600	4,650	9,450	2,700	955	6,740	4,650	9,900	850
20	10,200	700	4,760	46,000	4,300	17,600	2,460	850	5,680	4,080	7,960	700
21	6,030	510	29,400	28,100	3,960	19,500	2,350	900	7,540	10,200	7,820	1,010
22	4,880	510	34,100	17,000	3,730	15,900	2,120	900	11,500	9,000	8,550	1,340
23	3,380	510	22,400	11,800	3,500	12,900	2,120	2,120	9,300	6,030	6,380	2,000
24	3,160	510	15,400	14,300	3,270	11,700	1,890	10,200	6,500	4,190	4,420	1,780
25	2,700	510	11,000	16,300	3,160	11,500	1,780	7,400	4,650	3,040	3,270	1,400
26	2,580	510	38,200	17,800	3,040	11,500	1,670	5,570	3,380	2,240	2,460	1,180
27	2,350	510	28,100	18,700	2,920	10,200	1,670	13,900	2,700	1,780	2,120	1,010
28	2,120	510	16,600	15,700	2,700	9,750	1,670	22,000	2,000	1,450	11,300	850
29	1,780	510	12,700	13,600	....	8,850	1,670	19,300	2,240	1,180	16,300	800
30	1,450	1,010	48,600	9,600	....	7,260	1,890	16,100	3,160	1,060	11,500	3,160
31	1,230	....	46,500	9,000	....	6,140	....	9,300	....	955	8,250	....

Daily discharge, in second feet, of Cumberland River at Burnside, Ky., for the years ending September 30, 1915-1920.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	22,800	1,560	6,380	35,300	11,000	6,030	9,900	3,960	11,000	1,060	1,890	750
2	34,800	1,450	5,570	36,500	18,300	7,820	8,250	3,620	6,740	900	1,340	900
3	22,600	1,400	5,110	37,200	18,900	14,300	7,000	3,380	4,650	750	2,460	850
4	14,500	1,280	4,650	25,900	15,000	15,700	6,260	4,540	3,620	660	2,920	800
5	12,400	1,280	4,420	17,800	12,000	13,600	5,680	6,620	2,810	650	4,650	955
6	17,400	1,120	3,840	14,300	10,900	11,200	5,000	5,460	2,460	573	3,620	955
7	12,000	1,060	3,500	25,700	10,900	11,500	4,420	4,540	3,270	555	3,730	850
8	8,100	1,060	3,160	68,900	10,400	17,900	7,260	3,730	5,460	537	7,260	750
9	5,920	1,060	2,920	47,000	10,400	18,400	15,500	3,270	5,460	600	9,150	650
10	4,650	1,890	2,810	29,000	15,700	15,000	16,100	2,810	4,420	1,400	7,680	630
11	3,500	2,120	2,700	20,300	18,100	11,200	13,600	2,460	3,620	4,190	4,650	650
12	3,040	2,000	3,730	32,700	16,100	9,000	10,700	2,120	3,620	3,620	3,960	564
13	2,580	3,500	5,460	44,200	13,000	7,000	9,000	1,890	7,540	3,960	7,540	650
14	2,240	8,700	6,260	56,000	10,500	6,260	7,680	1,670	7,260	3,270	6,030	800
15	2,000	82,800	6,260	32,400	8,100	5,680	6,620	1,560	5,680	2,460	5,800	800
16	1,890	86,700	18,300	19,900	6,870	5,680	5,920	1,670	4,880	2,120	10,500	670
17	1,780	46,000	61,900	14,600	6,260	5,460	5,920	1,670	4,760	2,000	13,000	630
18	1,780	22,200	105000	11,200	5,800	5,000	4,760	1,450	5,220	2,580	9,300	1,400
19	3,040	26,500	99,500	8,550	5,460	4,760	4,300	1,280	4,760	3,270	6,870	1,120
20	22,200	35,300	71,500	7,400	4,880	4,420	3,840	1,120	3,960	5,570	5,220	850
21	13,600	23,500	46,000	7,260	4,420	4,300	3,500	1,060	3,380	8,250	3,730	630
22	7,540	16,100	27,400	10,900	3,960	4,420	3,500	1,060	2,810	11,200	2,810	454
23	5,340	11,000	13,200	31,700	3,840	4,190	3,620	1,120	2,460	11,200	2,350	630
24	4,300	8,250	8,400	30,800	4,190	3,960	3,620	1,280	2,000	6,870	2,000	528
25	3,380	6,620	7,960	20,700	5,800	3,730	3,730	1,780	1,670	4,540	1,670	502
26	2,920	5,570	11,500	14,300	6,870	3,730	3,620	1,780	1,560	3,500	1,670	470
27	2,460	5,110	17,900	10,900	7,260	5,800	3,620	1,780	1,450	3,040	1,400	406
28	2,240	5,920	19,500	8,550	7,260	14,300	3,840	1,670	1,340	2,810	1,230	398
29	2,000	8,700	48,600	7,820	6,500	20,300	3,960	1,280	1,280	1,890	1,060	1,010
30	1,890	7,540	77,700	8,250	....	16,300	3,960	4,300	1,230	1,560	1,010	750
31	1,780	....	50,700	7,820	....	12,400	....	20,900	....	2,350	750	....
1916-17												
1	600	850	1,340	14,500	21,100	21,500	9,300	4,650	2,700	750	3,160	1,120
2	555	800	1,230	7,960	22,400	51,200	13,000	4,420	2,810	630	2,460	2,240
3	620	750	1,180	9,000	16,100	89,500	21,500	3,620	5,340	591	2,240	2,810
4	630	700	1,120	43,500	12,500	94,000	16,300	3,380	4,420	650	2,240	2,810
5	582	670	1,180	112000	9,150	87,900	15,700	3,500	3,380	573	1,900	2,460
6	510	610	1,280	103000	6,740	63,200	29,000	3,380	2,580	519	1,560	1,890
7	486	591	1,400	71,000	5,920	48,100	28,300	3,160	2,240	486	1,400	1,450
8	486	582	1,670	50,100	5,340	39,800	22,600	2,920	2,000	470	1,180	1,120
9	454	555	1,560	29,000	5,570	27,600	17,600	2,810	2,120	454	1,010	1,010
10	454	546	1,670	13,900	5,110	17,000	13,700	2,700	2,810	446	1,180	900
11	406	510	1,670	8,250	4,420	13,200	10,200	2,580	3,730	446	1,780	750
12	398	537	1,670	6,260	3,840	21,500	8,250	2,460	3,500	422	1,890	670
13	343	573	1,670	5,220	3,500	47,500	8,400	2,460	2,810	420	1,890	630
14	383	630	1,560	6,030	3,380	35,300	7,960	2,350	2,460	420	1,560	573
15	438	610	1,560	13,900	4,420	27,600	7,400	2,350	2,120	573	1,340	486
16	610	600	1,450	16,400	9,300	20,100	6,140	2,240	1,670	7,000	3,270	486
17	1,670	591	1,280	13,200	11,000	53,800	5,460	2,000	1,560	7,820	6,870	446
18	1,670	600	1,230	10,100	10,100	82,800	5,000	1,890	1,280	15,000	6,140	438
19	4,540	600	1,180	10,400	9,750	50,900	4,420	1,780	1,120	10,200	4,190	406
20	7,400	591	1,180	11,200	45,200	30,600	3,960	1,670	1,010	8,550	2,920	390

Daily discharge, in second feet, of Cumberland River at Burnside, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
21	7,960	582	1,670	11,000	60,500	18,900	3,620	1,450	1,120	6,260	2,120	366
22	7,000	573	4,300	45,800	39,000	20,700	3,160	1,280	1,120	9,750	2,350	358
23	4,760	591	9,450	61,800	25,700	18,700	3,040	1,340	1,120	10,100	4,760	329
24	3,160	1,010	10,100	32,400	34,800	43,000	2,810	2,000	1,060	11,200	3,960	329
25	2,350	1,180	7,820	19,300	41,200	58,700	2,700	2,120	955	11,000	3,380	329
26	1,890	1,400	5,680	12,200	26,500	37,200	2,460	2,000	850	8,550	3,270	329
27	1,560	1,450	4,760	8,700	17,800	31,700	2,350	1,780	750	7,540	2,350	1,120
28	1,280	1,560	25,000	7,260	13,200	33,900	2,120	2,460	700	8,100	1,780	2,580
29	1,060	1,450	71,500	7,680	....	24,800	2,120	3,840	519	8,400	1,400	2,920
30	1,010	1,400	42,500	20,700	....	17,000	3,380	3,960	690	5,680	1,120	2,580
31	955	....	25,900	18,700	....	11,700	....	3,160	....	4,190	1,010	....
1917-18												
1	1,780	4,080	524	3,000	69,100	6,260	4,540	7,540	2,580	5,460	1,890	970
2	1,430	3,730	695	3,000	44,000	5,680	4,190	6,260	2,120	6,260	2,000	1,430
3	1,030	3,040	800	2,500	25,000	5,340	4,880	5,460	2,120	5,920	1,430	1,780
4	912	2,580	912	2,500	13,400	5,340	14,100	4,760	1,890	4,080	1,200	2,920
5	695	2,120	970	2,500	9,600	7,540	16,600	4,300	1,660	2,580	912	4,300
6	636	1,780	912	2,500	7,260	11,200	12,900	3,730	1,660	1,890	745	7,400
7	569	1,540	912	4,880	6,740	13,000	10,200	3,380	1,660	1,370	695	6,030
8	508	1,430	912	9,900	7,820	13,700	53,300	3,270	1,780	1,140	533	3,840
9	441	1,320	912	9,150	9,450	12,400	61,100	3,960	1,660	1,080	550	2,460
10	378	1,200	912	7,260	10,400	11,500	39,000	7,000	1,320	1,140	533	1,780
11	303	1,030	900	4,800	8,550	9,450	23,700	5,220	1,140	1,370	524	1,260
12	325	970	900	6,000	7,400	8,550	15,200	4,760	1,030	1,200	490	1,140
13	378	912	850	11,000	6,620	7,540	*9,900	7,540	912	970	490	1,030
14	425	912	800	10,000	6,140	6,870	7,820	36,800	800	800	490	695
15	362	855	750	18,900	5,680	6,260	6,030	37,000	695	607	465	626
16	378	855	650	25,400	5,460	5,800	5,460	20,500	645	533	449	533
17	362	800	650	19,100	5,340	5,570	5,800	10,500	569	533	449	533
18	645	800	650	12,200	4,880	5,000	6,740	7,400	533	490	490	490
19	5,110	695	650	9,000	4,420	4,420	6,870	5,800	578	490	745	516
20	6,870	695	700	7,000	14,800	4,190	6,260	6,140	695	433	550	607
21	11,500	645	800	5,500	29,000	4,420	8,850	17,000	745	370	533	607
22	5,570	645	900	5,000	22,400	4,880	18,900	14,600	2,240	401	533	578
23	3,960	645	1,780	4,500	14,300	5,340	16,100	16,100	4,420	441	524	533
24	2,700	616	2,120	5,340	10,500	5,460	12,200	30,300	3,380	441	449	533
25	2,120	569	2,350	4,540	8,250	11,000	9,000	15,500	3,040	457	409	533
26	1,540	542	4,540	4,420	7,540	12,000	7,820	9,900	2,810	490	370	465
27	1,430	524	5,460	27,900	7,260	10,200	11,700	7,130	3,840	490	385	449
28	1,260	524	6,140	115000	6,870	8,700	12,500	5,800	3,960	626	516	385
29	1,540	508	5,460	149000	....	7,000	9,900	4,650	3,500	1,030	645	332
30	2,460	482	4,650	101000	....	5,800	8,100	3,730	3,620	1,430	578	310
31	3,270	....	3,500	91,200	....	5,000	....	3,040	....	1,540	695	....
1918-19												
1	465	31,200	5,460	25,700	4,760	12,200	8,400	14,500	4,650	1,660	550	465
2	465	20,700	4,880	116000	4,420	9,900	6,740	18,500	3,840	1,320	1,200	385
3	465	12,000	3,960	116000	3,730	8,250	5,680	18,300	3,270	1,080	1,200	385
4	465	61,400	3,380	74,300	3,500	6,870	4,880	15,400	2,810	855	745	310
5	310	4,650	2,920	45,200	3,500	6,260	4,540	10,200	2,350	745	645	310
6	465	3,500	2,580	30,300	3,380	14,800	4,300	7,400	2,000	745	1,320	310
7	310	2,700	2,350	14,500	3,160	33,900	3,960	7,130	1,780	645	3,500	310
8	310	2,350	2,240	9,000	2,810	22,800	3,500	7,260	1,660	745	2,120	310
9	310	1,890	2,000	8,400	2,810	18,900	3,380	13,600	3,040	745	745	310
10	310	1,890	1,890	8,250	2,810	27,600	3,270	22,000	3,500	1,080	745	310
11	310	1,890	1,890	7,260	2,700	22,200	4,080	18,500	2,920	970	550	310
12	550	1,780	3,040	5,920	2,470	16,300	6,500	11,800	2,350	855	745	240
13	550	1,780	3,160	5,800	2,470	11,500	8,550	7,960	2,350	855	745	240

Daily discharge, in second feet, of Cumberland River at Burnside, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1918-19												
14	550	1,660	3,270	5,570	2,470	8,700	8,400	6,140	2,240	745	1,080	240
15	385	1,540	11,800	5,570	2,810	7,680	6,870	5,340	2,120	645	1,890	240
16	385	1,540	23,700	5,680	3,960	7,000	5,920	4,760	1,890	645	1,320	240
17	310	1,890	20,100	6,260	4,650	6,380	7,540	4,300	1,540	645	970	175
18	465	5,340	12,700	9,150	4,300	20,700	11,700	4,420	1,200	550	745	115
19	310	8,700	7,400	20,700	3,960	19,100	10,200	4,300	1,080	600	745	115
20	1,430	7,000	5,460	20,100	3,730	12,700	8,100	4,190	1,080	645	645	115
21	4,300	5,680	4,650	15,400	3,960	9,450	6,260	6,500	970	550	550	115
22	6,140	4,650	5,110	11,000	4,880	7,680	5,220	12,700	970	465	465	240
23	4,300	4,190	7,960	8,400	10,100	6,380	5,000	13,200	850	465	550	465
24	3,270	3,500	13,700	22,400	16,100	5,800	4,880	11,500	850	385	385	645
25	2,000	3,160	14,800	26,500	13,900	5,000	4,300	11,200	1,660	310	310	550
26	2,120	2,810	11,500	18,900	15,200	4,420	3,620	28,300	3,500	310	310	350
27	2,700	2,350	8,550	14,100	15,900	4,420	3,380	22,400	2,920	310	310	250
28	2,810	2,350	6,740	9,900	14,100	14,500	3,160	20,500	3,040	310	310	200
29	3,380	2,700	5,680	7,820	....	20,100	3,040	13,200	2,000	310	385	175
30	4,080	4,190	5,000	6,380	....	15,700	5,000	7,960	2,000	1,080	465	175
31	19,700	....	4,190	5,570	....	11,000	....	5,920	....	1,080	550	....
1919-20												
1	175	6,380	19,700	3,380	6,380	7,540	6,260	13,900	2,920	1,200	550	2,920
2	175	83,900	15,500	3,620	5,220	6,620	45,800	13,200	2,580	1,080	745	2,810
3	175	66,000	15,000	3,500	4,650	6,380	82,900	11,000	3,270	1,080	550	2,810
4	175	34,800	9,900	3,380	5,110	6,030	51,200	11,000	7,130	1,080	550	2,350
5	175	19,500	6,740	3,160	46,500	8,400	36,500	9,150	29,400	1,080	465	1,890
6	310	9,600	5,800	2,920	31,200	16,300	23,000	7,540	31,700	1,200	465	1,780
7	745	6,140	31,700	2,460	18,700	14,100	17,800	6,870	16,800	1,890	465	1,540
8	1,080	4,650	54,300	3,040	12,400	11,500	13,900	10,700	10,500	2,120	645	1,430
9	855	4,080	36,000	44,000	10,100	9,600	11,700	12,200	6,870	2,120	1,080	1,320
10	500	3,500	28,300	58,200	8,100	7,680	10,700	8,550	5,110	1,540	1,540	1,320
11	400	3,730	25,200	28,300	7,680	6,620	8,700	6,500	3,840	1,320	4,760	1,430
12	1,780	7,260	18,700	15,000	7,540	9,750	7,400	5,460	3,040	1,320	4,650	5,800
13	12,400	9,750	15,000	10,700	6,870	69,900	6,620	4,760	2,580	1,320	5,800	17,800
14	10,700	7,680	59,500	8,400	6,620	45,200	6,140	6,260	2,120	1,320	13,400	21,500
15	12,400	6,380	57,700	7,000	6,260	32,200	5,800	4,760	1,890	1,200	13,200	15,700
16	27,200	5,800	31,700	5,920	5,800	22,800	5,220	4,420	1,780	1,200	20,500	12,700
17	39,000	4,880	20,700	7,000	5,570	20,900	4,760	3,500	1,430	1,080	15,200	7,820
18	29,000	4,190	13,200	7,680	5,340	20,900	5,800	3,160	1,320	3,500	9,600	5,920
19	20,700	3,500	9,900	7,400	4,650	35,300	5,800	3,380	1,080	3,380	8,400	4,540
20	8,550	3,270	8,250	6,870	4,420	69,900	5,220	3,380	970	4,080	6,030	3,380
21	5,340	2,580	6,740	8,400	4,650	44,000	5,680	3,160	2,350	5,110	4,880	2,700
22	4,080	2,350	5,800	73,800	30,100	26,800	13,200	2,920	9,750	4,420	5,800	2,240
23	3,500	2,120	5,220	95,600	62,100	15,400	10,200	2,920	9,150	2,920	11,500	1,890
24	12,700	2,000	4,650	107000	36,500	10,200	7,820	2,920	6,500	2,120	10,700	1,780
25	23,500	1,890	4,420	93,300	30,800	7,960	5,800	2,810	4,540	1,540	6,260	3,380
26	16,800	7,680	4,190	67,300	22,000	7,260	5,800	5,220	3,270	1,320	4,880	2,920
27	11,300	56,900	3,620	44,000	12,900	6,620	12,200	5,920	2,350	1,080	3,840	2,580
28	7,000	40,000	3,500	24,100	10,400	5,800	13,200	4,880	1,890	970	3,270	3,500
29	5,220	19,900	3,500	12,900	7,960	5,570	11,800	4,080	1,660	745	2,920	2,350
30	3,960	19,900	3,380	9,150	....	5,460	9,450	3,270	1,320	550	2,350	2,120
31	3,270	....	3,160	7,130	....	4,880	....	2,810	....	550	1,890	....

Monthly discharge of Cumberland River at Burnside, Ky., for the years ending September 30, 1915-1920.

(Drainage area, 4,890 square miles.)

Month	Discharge in Second-feet				Run-Off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1914-15					
October	47,300	150	5,360	1.10	1.27
November	1,230	510	702	.144	.16
December	48,600	1,230	13,500	2.76	3.18
January	55,600	5,340	18,800	3.84	4.43
February	74,000	2,700	12,300	2.52	2.62
March	19,500	2,120	7,300	1.51	1.74
April	5,570	1,670	3,010	.616	.69
May	22,000	850	5,100	1.04	1.20
June	15,000	2,000	6,660	1.36	1.52
July	31,000	955	7,630	1.56	1.80
August	16,300	900	4,900	1.00	1.15
September	6,870	700	2,410	.493	.55
The year	74,000	150	7,320	1.50	20.31
1915-16					
October	34,800	1,780	7,960	1.63	1.88
November	86,700	1,060	14,200	2.90	3.24
December	105,000	2,700	24,300	4.97	5.73
January	68,900	7,260	24,000	4.91	5.66
February	18,900	3,840	9,610	1.97	2.12
March	20,300	3,730	9,340	1.91	2.20
April	16,100	3,500	6,490	1.33	1.48
May	20,900	1,060	3,120	.638	.74
June	11,000	1,230	4,010	.820	.91
July	11,200	537	3,160	.646	.74
August	13,000	750	4,430	.906	1.04
September	1,400	398	733	.150	.17
The year	105,000	398	9,310	1.90	25.91
1916-17					
October	7,960	343	1,810	.370	.43
November	1,560	510	790	.162	.18
December	71,500	1,120	7,640	1.56	1.80
January	112,000	5,220	25,800	5.28	6.09
February	60,500	3,380	16,900	3.46	3.60
March	94,000	11,700	40,000	8.18	9.43
April	29,000	2,120	9,400	1.92	2.14
May	4,650	1,280	2,640	.540	.62
June	5,340	519	2,020	.413	.46
July	15,000	420	4,750	.971	1.12
August	6,870	1,010	2,510	.513	.59
September	2,920	329	1,140	.233	.26
The year	112,000	329	9,630	1.97	26.72
1917-18					
October	11,500	303	1,960	0.401	.46
November	4,080	482	1,230	.252	.28
December	6,140	524	1,730	.354	.41
January	149,000	2,500	22,100	4.52	5.21
February	69,100	4,420	13,500	2.76	2.87
March	13,700	4,190	7,590	1.55	1.79
April	61,100	4,190	14,300	2.92	3.26
May	37,000	3,040	10,300	2.11	2.43
June	4,420	533	1,920	.393	.44
July	6,260	370	1,490	.305	.35
August	2,000	370	686	.140	.16
September	7,400	310	1,500	.307	.34
The year	149,000	303	6,490	1.33	18.00

Monthly discharge of Cumberland River at Burnside, Ky., for the years ending September 30, 1915-1920.—Continued.

(Drainage area, 4,800 square miles.)

Month	Discharge in Second-feet				Run-off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1918-19					
October	19,700	310	2,060	0.421	0.49
November	31,200	1,540	5,190	1.06	1.18
December	23,700	1,890	6,840	1.40	1.61
January	116,000	5,570	22,100	4.52	5.21
February	16,100	2,470	5,800	1.19	1.24
March	33,900	4,420	12,800	2.62	3.02
April	11,700	3,040	5,680	1.16	1.29
May	28,300	4,190	11,600	2.37	2.73
June	4,650	850	2,210	.452	.50
July	1,660	310	721	.147	.17
August	3,500	310	864	.177	.20
September	645	115	287	.059	.07
The year	116,000	115	6,390	1.31	17.71
1919-20					
October	39,000	175	8,490	1.74	2.01
November	83,900	1,890	15,000	3.07	3.42
December	59,500	3,160	17,100	3.50	4.04
January	107,000	2,460	25,000	5.11	5.89
February	62,100	4,420	14,700	3.01	3.25
March	69,900	4,880	18,300	3.74	4.31
April	82,900	4,760	15,200	3.11	3.47
May	13,900	2,810	6,150	1.26	1.45
June	31,700	970	5,970	1.22	1.36
July	5,110	550	1,790	.366	.42
August	20,500	465	5,380	1.10	1.27
September	21,500	1,320	4,740	.969	1.08
The year	107,000	175	11,500	2.35	31.97

SOUTH FORK OF CUMBERLAND RIVER AT NEVELSVILLE, KY.

LOCATION.—One-fourth mile below Turkey Creek ferry, on Greenwood-Monticello pike about a mile from Nevelsville, McCreary County. Little South Fork enters on left about 1¾ miles above station.

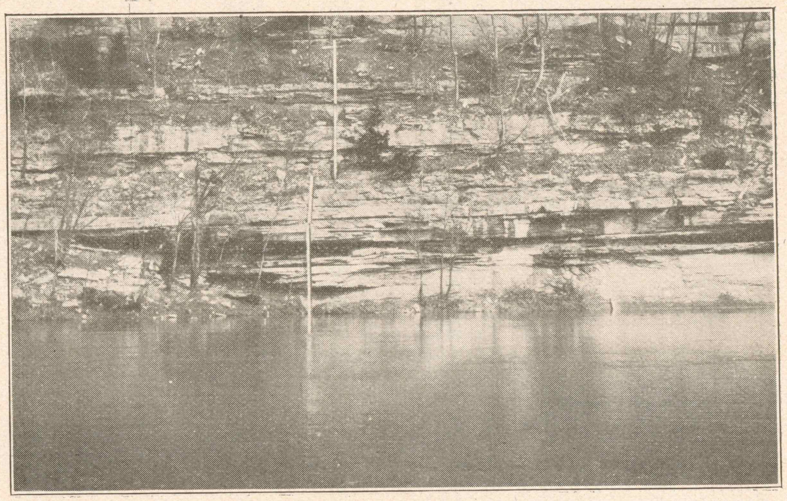
DRAINAGE AREA.—1,260 square miles (measured on maps of Kentucky and Tennessee, compiled by United States Geological Survey, on scale 1:500,000).

RECORDS AVAILABLE.—March 10, 1915, to September 30, 1920.

Gage.—Vertical staff gage in 5 sections bolted to rock ledges on left bank; read by Mart Keith and Ben. Whitehead. A reference gage for use in referencing soundings at the measuring section, is attached to a tree on the left bank 110 feet below cable.

Discharge Measurements.—Made from cable about 2,000 feet below gage, or by wading.

Channel and Control.—Channel straight above and below



Gage on South Fork of Cumberland River near Greenwood, Ky., April 9, 1915.

bed, compact gravel. Low-water control is partly the bed of the river below gage and partly a gravel bar about 2 miles below gage. Both are probably permanent. High-water control is bed of stream for several miles below gage, and may be slightly affected by foliage along the banks.

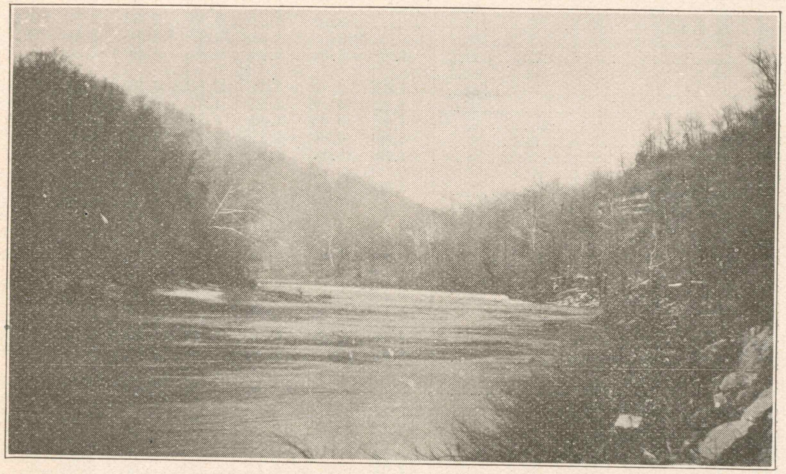
Extremes of Discharge.—Maximum stage recorded during period of record, 35.8 feet January 28, 1918 (discharge, roughly 53,100 second-feet; minimum stage, 1.54 feet, September 19, 1919 (discharge, 50 second-feet).

Ice.—Stage-discharge relation seldom if ever affected by ice.

Regulation.—Operation of a small power plant short distance above gage may affect flow at extreme low water.

Accuracy.—Stage-discharge relation probably permanent; not affected by ice during period of record. Rating curve well defined to 23,000 second-feet. Gage read to hundrtdths twice daily. Daily discharge ascertained by applying mean daily gage height to rating table. Records excellent.

Cooperation.—Station maintained in cooperation with State Geological Survey of Kentucky.



South Fork of Cumberland River looking upstream to mill dam from point near gage. March 11, 1915.

Discharge measurements of Cumberland River at Nevelsville, Ky. during the period 1915-1920.

Date	Made by—	Gage Height	Discharge	Date	Made by—	Gage Height	Discharge
		Ft.	Sec.-ft.			Ft.	Sec.-ft.
1915				1917			
Mar. 10	Ellsworth &			July 17	B. E. Jones	12.13	9,900
	Sellier	4.88	1,530	July 17	B. E. Jones	16.51	15,500
Apr. 9	C. E. Ellsworth	3.72	816	17	B. E. Jones	17.92	17,800
1916				18	B. E. Jones	13.27	10,200
Apr. 24	A. H. Horton	4.48	1,290	1918			
Sept. 16	B. E. Jones	2.20	150	June 15	Hopkins &		
17	B. E. Jones	3.07	446		Kidwell	2.43	235
1917				1920			
Jan. 9	B. E. Jones	7.35	3,250	May 15	W. R. King	3.88	874

Daily gage height, in feet, of South Fork of Cumberland River at Nevelsville, Ky., for the years ending September 30, 1915-1920.

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1915							
1		4.68	3.40	4.26	7.19	3.00	5.23
2		4.54	3.20	4.70	5.51	3.04	4.79
3		4.38	3.46	5.21	4.52	3.68	4.25
4		4.26	8.25	4.63	8.37	3.82	3.90
5		4.13	7.04	4.08	9.99	3.36	5.22
6		4.02	5.52	4.86	10.20	2.98	9.14
7		3.90	4.72	6.82	7.28	2.72	8.22
8		3.80	4.51	9.16	5.66	2.57	6.36
9		3.73	4.33	8.67	4.81	2.64	5.23
10	4.80	3.63	3.98	6.64	4.40	2.56	4.58
11	4.65	3.68	3.69	5.14	4.10	4.62	4.17
12	4.42	4.12	3.50	4.63	5.68	6.22	3.86
13	4.22	5.12	3.40	4.54	6.30	5.38	3.56
14	4.05	4.88	3.31	4.51	10.16	4.28	3.33
15	3.93	4.48	3.20	7.65	7.68	5.80	3.14
16	4.35	4.26	3.02	12.42	6.10	5.56	3.01
17	5.42	4.06	2.88	8.92	6.18	4.60	2.90
18	5.99	3.91	2.74	6.58	4.92	7.70	2.80
19	7.03	3.76	2.65	5.52	4.84	8.20	2.72
20	9.65	3.62	2.62	4.91	4.98	7.04	2.64
21	9.11	3.54	2.54	5.20	17.55	8.48	2.92
22	7.74	3.44	2.56	6.80	9.30	7.84	3.88
23	7.04	3.38	2.79	5.66	6.47	5.42	3.82
24	6.40	3.29	6.96	4.56	5.11	4.82	3.28
25	6.01	3.22	4.68	3.96	4.37	4.16	2.98
26	5.78	3.20	4.96	3.64	3.89	3.74	2.79
27	5.62	3.12	9.26	3.38	3.52	4.97	2.66
28	5.56	3.06	7.61	3.24	3.34	14.38	2.56
29	5.28	3.05	6.65	3.13	3.05	10.13	4.86
30	4.96	4.10	5.24	4.45	2.88	8.22	4.88
31	4.78		4.45		2.74	6.56	

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	16.70	3.46	5.28	10.58	7.04	5.07	6.43	3.72	8.28	2.46	2.79	2.60
2	15.24	3.36	5.00	16.48	10.10	6.78	5.83	3.61	5.91	2.37	4.30	2.58
3	8.35	3.26	4.80	15.44	8.78	8.92	5.49	3.57	4.76	2.47	5.12	2.72
4	6.34	3.15	4.58	10.93	7.46	8.15	5.30	4.27	4.31	2.35	4.23	2.93
5	7.70	3.07	4.42	8.89	6.89	7.23	5.01	4.33	4.13	2.26	4.08	2.93
6	10.45	3.02	4.24	8.48	6.66	6.65	4.67	4.13	3.81	2.31	4.63	2.29
7	7.74	2.97	4.05	18.80	6.58	7.49	4.55	3.87	4.79	2.17	4.32	2.60
8	6.20	2.96	3.92	22.96	6.14	9.54	6.69	3.69	7.17	2.13	3.88	2.53
9	5.18	3.60	3.82	12.64	6.10	8.52	9.41	3.53	5.30	2.78	5.12	2.46
10	4.56	5.16	3.74	9.84	7.77	7.35	8.37	3.41	4.41	5.47	4.70	2.35
11	4.19	4.28	3.74	8.77	8.04	6.67	7.44	3.27	3.91	6.39	3.96	2.30
12	3.92	4.31	4.44	8.24	7.33	6.01	6.77	3.15	5.74	5.28	7.04	2.35
13	3.71	7.52	4.62	17.02	6.74	5.52	6.11	3.06	10.06	5.52	9.13	2.31
14	3.56	10.96	4.62	16.18	6.20	5.27	5.68	2.99	7.39	4.43	6.62	2.25
15	3.42	36.62	4.51	10.04	5.52	5.13	5.29	3.06	5.81	3.96	6.20	2.24
16	3.33	20.62	8.56	8.76	5.19	4.97	4.96	3.42	5.04	3.74	7.27	2.33
17	3.29	11.48	13.62	8.12	5.02	4.73	4.68	3.11	4.55	3.64	8.83	3.04
18	3.26	8.54	30.30	6.96	4.89	4.57	4.56	2.95	4.40	4.62	7.34	2.77
19	9.32	16.68	20.65	6.22	4.69	4.51	4.39	2.86	3.93	5.00	6.30	2.55
20	17.96	15.55	11.42	6.08	4.44	4.40	4.15	2.80	3.67	6.72	5.03	2.35
21	10.06	10.89	8.83	6.06	4.26	4.31	4.17	2.74	3.49	9.71	4.34	2.25

Daily gage height, in feet, of South Fork of Cumberland River at Nevelsville, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
22	7.35	8.60	7.43	8.10	4.13	4.39	4.57	2.72	3.39	10.68	3.90	2.18
23	6.00	7.25	6.60	16.02	4.06	4.31	4.71	2.84	3.28	7.47	3.56	2.23
24	5.24	6.40	6.00	11.44	4.52	4.13	4.55	3.10	3.08	5.55	3.33	2.24
25	4.73	5.75	6.26	8.92	6.08	4.03	4.33	4.29	3.07	4.51	3.11	2.15
26	4.43	5.20	10.82	7.63	6.08	4.73	4.23	3.59	3.25	4.48	3.05	2.09
27	4.10	5.20	9.98	6.81	5.84	6.49	4.25	3.19	2.96	4.07	2.88	2.04
28	3.94	7.16	9.38	6.21	5.38	11.35	4.19	2.93	2.80	3.85	2.76	2.04
29	3.92	6.28	21.82	5.96	5.20	10.92	3.99	2.85	2.70	3.42	2.86	2.04
30	3.77	5.80	21.82	5.81		8.68	3.84	7.67	2.56	3.12	2.86	2.21
31	3.60		11.83	5.48		7.28		15.22		2.92	2.74	
1916-17												
1	2.29	2.19	2.51	6.28	10.62	10.92	6.50	4.26	2.66	2.17	4.12	3.46
2	2.19	2.17	2.44	5.39	9.01	15.43	8.51	3.78	3.30	2.09	3.70	4.30
3	2.15	2.15	2.43	8.08	7.16	32.00	10.26	3.58	3.54	2.05	3.66	4.06
4	2.08	2.11	2.45	20.98	6.35	25.74	8.31	3.67	3.56	2.04	4.10	4.76
5	2.05	2.09	2.57	27.08	5.98	21.42	10.01	3.86	3.26	2.02	3.56	3.86
6	2.00	2.09	2.70	22.65	5.24	12.50	14.98	3.88	3.05	2.00	3.28	3.24
7	1.97	2.07	2.76	12.50	5.10	10.54	4.82	3.72	2.88	1.96	5.92	3.14
8	1.94	2.04	2.70	9.11	5.00	9.59	9.40	3.70	2.78	2.04	2.77	2.90
9	1.91	2.04	2.16	7.46	5.12	8.33	8.71	3.72	3.08	2.02	2.74	2.76
10	1.94	2.04	2.86	6.47	4.78	7.40	8.00	3.66	4.30	2.00	4.26	2.70
11	1.98	2.05	2.94	5.74	4.54	6.63	7.15	3.54	4.32	1.96	4.52	2.56
12	2.13	2.04	2.96	5.08	4.29	13.04	6.52	3.48	3.98	1.86	3.62	2.40
13	2.21	2.04	2.91	4.60	4.07	14.10	6.14	3.46	3.60	1.83	3.20	2.41
14	2.15	2.05	2.82	6.19	4.10	11.03	6.06	3.30	3.32	1.87	2.94	2.34
15	2.07	2.07	2.70	10.62	5.24	10.88	5.68	3.18	3.05	3.88	3.31	2.29
16	2.08	2.07	2.63	8.53	6.76	10.02	5.25	3.09	2.85	10.06	8.12	2.25
17	2.07	2.05	2.54	7.44	7.22	25.76	4.92	3.66	2.70	12.54	7.79	2.23
18	2.09	2.04	2.56	6.88	6.83	21.94	4.62	2.91	2.58	13.28	6.34	2.20
19	2.29	2.03	2.54	8.01	9.17	11.76	4.39	2.82	2.51	8.59	4.92	2.79
20	2.63	2.02	2.45	7.85	15.36	9.07	4.21	2.74	2.56	6.50	4.14	2.30
21	3.02	2.03	2.74	7.50	20.24	8.83	4.10	2.08	2.43	7.12	3.68	2.10
22	2.96	2.02	5.92	19.22	11.24	11.96	3.98	2.68	2.41	10.98	4.41	2.04
23	2.86	2.07	7.04	16.80	8.74	10.50	3.82	3.06	2.47	10.92	4.62	2.45
24	2.72	2.27	5.72	10.38	14.55	20.30	3.70	3.26	2.51	11.07	4.39	2.35
25	2.54	2.40	4.82	8.34	11.41	18.39	3.60	3.13	2.49	9.62	3.61	2.05
26	2.43	2.76	4.30	7.00	8.58	10.98	3.53	2.92	2.41	8.65	3.25	2.00
27	2.32	2.80	4.04	6.12	7.39	13.45	3.43	2.86	2.27	6.94	2.97	2.34
28	2.27	2.02	14.44	5.76	6.78	15.36	3.34	2.78	2.17	7.04	2.80	4.16
29	2.19	2.53	24.49	7.16		10.94	4.08	2.74	2.27	6.52	2.70	5.25
30	2.19	2.50	10.52	16.15		8.85	4.14	2.64	2.17	5.60	2.65	3.78
31	2.21		7.73	10.56		7.42		2.56		4.66	2.61	
1917-18												
1	3.15	4.8	2.55	4.0	11.6	5.1	4.4	6.7	3.6	2.55	3.8	2.95
2	2.85	4.2	2.65	4.0	9.9	4.9	4.3	5.8	3.5	2.75	3.2	3.25
3	2.65	3.8	3.35	3.9	8.3	4.7	5.7	5.3	3.4	2.75	2.95	3.15
4	2.5	3.5	3.3	3.8	7.2	4.5	12.3	4.9	3.35	2.7	2.6	3.8
5	2.34	3.25	3.1	3.65	6.3	5.0	10.0	4.6	3.25	2.5	2.42	4.4
6	2.32	3.15	3.0	4.1	5.6	5.0	7.8	4.3	3.3	2.34	2.28	5.2
7	2.27	3.05	2.95	5.7	5.8	6.2	8.3	4.1	3.55	2.22	2.24	4.5
8	2.16	3.0	2.9	7.1	5.8	5.5	26.9	4.0	3.5	2.18	2.18	3.5
9	2.11	2.9	2.9	6.0	5.5	5.8	20.7	4.0	3.3	2.4	2.11	3.15
10	2.08	2.85	3.2	5.2	5.2	5.4	12.1	4.1	3.15	2.7	2.06	2.8
11	2.08	2.8	3.15	4.6	5.5	5.5	9.1	3.8	2.95	2.65	2.00	2.6
12	2.14	2.75	3.0	6.1	4.9	5.3	7.7	3.8	2.8	2.46	1.96	2.44
13	2.16	2.7	3.0	9.4	4.9	5.1	6.7	6.6	2.65	2.28	1.90	2.34

Daily gage height, in feet, of South Fork of Cumberland River at Nevelsville, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1917-18												
14	2.14	2.7	2.95	7.3	4.8	4.8	5.7	15.1	2.55	2.16	1.88	2.24
15	2.11	2.65	2.9	10.1	4.6	4.8	5.3	10.2	2.43	2.08	1.86	2.18
16	2.09	2.65	2.85	12.7	4.6	4.7	5.2	7.2	2.36	2.04	1.84	2.12
17	2.08	2.65	2.8	9.1	4.5	4.6	7.8	6.3	2.28	2.01	1.95	2.10
18	2.06	2.6	2.75	7.4	4.4	4.4	8.8	6.0	2.27	1.98	2.31	2.07
19	6.4	2.55	2.75	6.1	4.3	4.3	7.5	4.9	2.6	1.98	2.26	2.06
20	9.7	2.55	2.8	5.2	8.4	4.3	6.9	5.8	2.5	2.00	2.8	2.08
21	6.2	2.5	2.95	4.8	11.5	4.9	9.3	6.6	3.3	2.00	2.75	2.06
22	4.6	2.5	3.25	4.6	9.0	4.9	11.1	6.8	3.7	1.96	2.6	2.04
23	3.9	2.48	3.5	4.5	7.5	4.7	9.0	10.1	4.4	2.00	2.42	2.02
24	3.5	2.46	3.6	4.4	6.6	5.3	7.5	14.3	3.3	2.24	2.13	1.98
25	3.2	2.44	3.9	4.3	5.9	6.7	6.5	8.9	3.0	2.24	2.02	1.98
26	3.05	2.42	5.2	4.7	6.0	6.6	7.0	6.7	2.9	2.14	1.91	1.98
27	2.65	2.39	5.0	17.1	5.8	6.3	9.5	5.6	2.85	2.10	2.24	1.98
28	2.19	2.36	4.9	35.8	5.3	5.6	8.3	5.2	2.7	2.75	2.6	2.02
29	2.9	2.40	4.6	24.8	....	5.2	7.5	4.6	2.6	3.3	2.48	2.16
30	3.6	2.47	4.3	16.6	....	4.7	7.2	4.1	2.55	3.25	2.55	2.28
31	4.9	....	4.0	18.5	....	4.5	....	3.8	....	3.6	2.6	....
1918-19												
1	2.23	9.8	5.1	17.2	4.6	7.0	6.0	12.5	3.8	2.5	1.79	1.94
2	2.12	6.9	4.6	41.7	4.4	6.3	5.4	10.7	3.55	2.4	1.95	1.98
3	2.06	5.4	4.2	20.3	4.3	5.6	5.0	8.3	3.3	2.26	2.06	2.04
4	2.01	4.8	4.0	14.1	4.2	5.3	4.7	6.9	3.15	2.2	2.19	1.96
5	1.98	4.3	3.8	10.0	4.2	5.5	4.6	5.9	3.0	2.16	2.6	1.88
6	1.93	4.0	3.6	7.6	4.1	18.8	4.5	5.5	2.85	2.21	3.15	1.80
7	1.88	3.6	3.4	6.9	3.9	12.1	4.3	5.3	2.85	2.14	2.7	1.78
8	1.84	3.45	3.35	6.6	3.9	9.5	4.1	5.3	2.8	2.23	2.55	1.78
9	1.80	3.3	3.3	6.3	3.9	12.2	4.0	6.9	3.0	2.55	2.2	1.76
10	1.78	3.2	3.25	6.2	3.8	12.2	4.0	7.6	3.05	2.6	2.01	1.82
11	1.76	3.1	3.6	5.7	3.8	9.4	4.2	6.0	3.25	2.6	1.96	1.72
12	1.78	3.05	3.65	5.5	3.7	7.7	6.8	5.3	3.4	2.55	2.42	1.68
13	1.80	2.95	3.5	5.2	3.8	6.7	6.5	4.9	3.6	2.35	2.8	1.62
14	1.82	2.9	4.6	5.1	4.0	6.1	5.6	4.5	4.9	2.25	2.43	1.64
15	1.80	2.8	6.5	5.3	4.5	6.2	5.1	4.4	3.9	2.15	2.31	1.62
16	1.84	2.75	8.1	5.5	4.8	5.9	6.2	4.2	3.4	2.12	2.22	1.66
17	1.82	3.6	6.5	5.6	4.6	8.8	9.8	4.5	3.05	2.04	2.16	1.58
18	2.08	8.9	5.6	9.0	4.5	16.2	8.3	4.1	2.8	2.00	2.18	1.56
19	4.00	8.5	4.9	12.1	4.4	10.9	6.6	4.0	2.7	2.06	2.12	1.54
20	5.3	6.9	4.5	9.2	4.4	9.2	5.7	4.4	2.9	2.24	2.08	1.56
21	7.5	5.9	4.4	7.9	5.0	7.2	5.2	6.1	2.65	2.14	2.02	1.61
22	5.5	5.3	5.5	6.6	6.2	6.0	4.8	6.3	2.55	2.10	1.97	2.38
23	4.3	4.6	10.3	7.0	13.0	5.4	4.9	5.5	2.45	2.05	1.94	2.38
24	3.6	4.4	8.5	12.3	9.4	5.2	4.8	5.1	2.85	2.02	1.97	2.24
25	4.1	4.1	7.4	10.8	8.8	4.9	4.3	5.6	3.55	1.94	1.98	2.06
26	4.7	4.0	6.5	8.3	9.1	4.7	4.0	5.8	3.55	1.82	1.92	2.00
27	4.4	3.8	5.8	7.2	8.6	5.9	4.0	6.1	3.25	1.80	1.85	1.84
28	4.3	3.8	5.2	6.4	7.6	14.8	3.8	5.9	3.1	1.80	1.88	1.80
29	4.6	4.2	4.9	5.7	....	9.6	4.2	5.2	2.9	1.78	1.86	1.76
30	7.9	6.1	4.7	5.2	....	7.8	6.8	4.5	2.65	1.76	1.84	1.78
31	15.9	....	4.4	4.8	....	6.7	....	4.1	....	1.71	1.88	....
1919-20												
1	1.72	15.3	10.8	4.2	5.1	5.8	8.9	6.9	3.4	2.8	1.99	3.6
2	1.68	20.0	7.8	4.1	4.8	5.8	26.9	6.8	3.3	2.7	1.95	4.4
3	1.66	11.1	6.5	3.8	4.6	5.6	21.4	8.5	3.65	2.6	1.91	3.8
4	1.66	7.4	5.7	3.6	15.5	5.3	12.5	8.1	8.4	2.8	1.85	3.55

Daily gage height, in feet, of South Fork of Cumberland River at Nevelsville, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1919-20												
5	1.88	6.3	5.1	3.4	20.3	6.7	11.0	7.1	13.1	2.7	1.89	3.2
6	2.65	5.4	5.2	3.35	12.3	7.5	9.4	6.3	12.0	2.65	1.86	3.15
7	3.05	4.7	9.4	3.55	9.1	6.8	8.1	5.9	7.0	2.6	2.19	3.15
8	2.7	4.4	15.0	4.9	7.8	6.6	7.5	5.7	5.9	2.6	2.15	3.1
9	2.37	4.1	10.4	10.2	6.7	6.0	6.8	5.5	4.8	2.55	2.5	3.1
10	2.24	3.9	12.2	10.5	6.4	5.8	6.3	4.9	4.3	2.5	7.8	3.25
11	2.14	4.8	10.5	8.4	6.2	5.5	5.8	4.6	3.9	2.5	7.5	3.3
12	6.9	7.5	8.4	6.8	5.8	17.4	5.4	4.4	3.6	2.55	8.8	4.5
13	7.3	7.9	10.1	6.1	5.6	29.6	5.3	4.2	3.35	2.33	11.3	12.0
14	5.9	6.9	19.6	5.5	5.4	13.0	5.1	4.0	3.2	2.26	11.4	7.7
15	6.8	5.5	14.2	5.1	5.2	9.7	4.7	3.8	3.0	2.25	10.6	9.9
16	14.1	5.1	9.8	5.4	4.8	8.2	4.5	3.6	2.85	2.32	13.8	8.9
17	12.5	4.4	7.7	6.2	4.5	8.5	4.5	3.5	2.7	2.43	9.9	7.1
18	8.3	4.1	7.0	6.3	4.8	8.7	5.5	3.5	2.6	2.47	10.0	5.4
19	6.7	3.9	6.2	5.9	4.9	15.8	5.7	3.5	2.55	2.6	7.2	4.7
20	5.2	3.65	5.8	5.6	4.8	17.1	6.8	3.5	3.65	4.6	5.9	4.2
21	4.2	3.45	5.5	13.4	4.8	11.3	9.9	3.6	14.4	3.8	4.1	3.8
22	4.2	3.35	5.0	25.0	21.6	8.2	9.5	3.8	9.2	3.2	3.55	3.5
23	5.5	3.25	4.8	29.1	20.0	7.0	7.3	3.9	6.7	2.85	7.2	3.3
24	13.8	3.2	4.6	25.8	14.5	6.3	6.3	3.7	5.2	2.65	5.7	3.15
25	10.6	3.3	4.4	18.9	11.1	5.8	5.7	6.6	4.3	2.46	4.7	3.1
26	7.5	11.4	4.2	12.2	8.9	5.6	9.4	7.2	3.8	2.37	4.2	3.2
27	5.7	14.3	4.1	9.0	7.1	5.4	10.1	5.6	3.35	2.24	4.2	3.15
28	5.3	10.5	4.0	7.7	6.3	5.1	8.2	4.6	3.2	2.14	4.2	3.7
29	4.7	8.6	3.9	6.6	6.0	5.6	7.0	4.2	3.2	2.09	3.6	3.8
30	4.4	10.7	3.8	6.0	....	5.0	6.4	3.8	2.9	2.05	3.15	3.25
31	4.2	....	3.65	5.5	....	4.7	....	3.6	....	2.04	4.1	....

Daily discharge, in second feet, of South Fork of Cumberland River at Nevelsville, Ky., for the years ending September 30, 1915-1920.

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1915							
1	....	1,410	630	1,160	3,150	430	1,740
2	....	1,290	523	1,410	1,950	452	1,480
3	....	1,220	658	1,740	1,290	800	1,100
4	....	1,160	4,000	1,350	4,180	860	920
5	....	1,040	3,000	1,040	5,850	602	1,740
6	....	980	1,950	1,540	6,070	430	4,880
7	....	920	1,410	2,860	3,230	310	4,000
8	....	860	1,290	4,980	2,080	256	2,570
9	....	800	1,160	4,470	1,480	292	1,740
10	1,480	770	980	2,710	1,220	256	1,350
11	1,350	800	800	1,680	1,040	1,350	1,100
12	1,220	1,040	685	1,350	2,080	2,430	920
13	1,100	1,680	630	1,290	2,500	1,880	712
14	980	1,540	575	1,290	6,070	1,160	602
15	920	1,290	523	3,480	3,560	2,150	499
16	1,220	1,160	430	8,860	2,360	2,010	430
17	1,880	1,040	388	4,670	2,430	1,350	388
18	2,290	920	329	2,710	1,540	3,560	348

Daily discharge, in second feet, of South Fork of Cumberland River at Nevelsville, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Mar.	Apr.	May	June	July	Aug.	Sept.
1915							
19	3,000	860	292	1,950	1,480	4,000	310
20	5,410	740	274	1,540	1,610	3,000	292
21	4,880	712	256	1,740	17,200	4,280	388
22	3,560	658	255	2,860	5,080	3,650	920
23	3,000	630	348	2,080	2,640	1,880	860
24	2,570	575	3,000	1,350	1,680	1,480	575
25	2,290	523	1,410	980	1,220	1,100	430
26	2,150	523	1,610	770	920	800	348
27	2,010	475	5,080	630	685	1,610	292
28	2,010	452	3,480	549	602	11,800	256
29	1,810	452	2,710	499	452	5,960	1,540
30	1,610	1,040	1,740	1,220	388	4,000	1,540
31	1,480	....	1,220	....	329	2,710	....

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1915-16												
1	15,600	658	1,810	6,530	3,000	1,680	2,570	800	4,090	224	348	274
2	13,100	602	1,610	15,200	5,960	2,860	2,150	740	2,220	194	1,160	274
3	4,180	549	1,480	13,400	4,570	4,670	1,950	712	1,480	228	1,680	310
4	2,500	499	1,350	6,880	3,390	4,000	1,810	1,160	1,160	188	1,100	409
5	3,560	452	1,220	4,670	2,930	3,150	1,610	1,160	1,040	161	1,040	409
6	6,300	430	1,100	4,280	2,780	2,710	1,410	1,040	860	175	1,350	169
7	3,560	409	980	19,400	2,710	3,390	1,350	920	1,480	137	1,160	274
8	2,430	409	920	27,500	2,360	5,300	2,780	800	3,150	127	920	256
9	1,740	740	860	9,140	2,360	4,280	5,190	712	1,810	348	1,680	224
10	1,350	1,740	800	5,630	3,650	3,310	4,180	630	1,220	1,950	1,410	188
11	1,100	1,160	800	4,570	3,820	2,780	3,310	549	920	2,570	980	172
12	920	1,160	1,220	4,000	3,320	2,290	2,860	499	2,080	1,810	3,000	188
13	800	3,390	1,350	16,100	2,780	1,950	2,360	452	5,960	1,950	4,880	175
14	712	7,000	1,350	14,700	2,430	1,810	2,080	430	3,310	1,220	2,710	158
15	630	57,000	1,290	5,850	1,950	1,680	1,810	452	2,150	980	2,430	155
16	602	22,700	4,380	4,570	1,740	1,610	1,610	630	1,610	800	3,230	182
17	575	7,630	10,600	3,910	1,610	1,410	1,410	475	1,350	770	4,570	452
18	549	4,280	43,000	3,000	1,540	1,350	1,350	409	1,220	1,350	3,230	329
19	5,080	15,600	22,700	2,430	1,410	1,290	1,220	368	920	1,610	2,500	256
20	17,900	13,700	7,500	2,360	1,220	1,220	1,100	348	770	2,780	1,610	188
21	5,960	6,880	4,570	2,360	1,160	1,160	1,100	329	685	5,520	1,160	158
22	3,310	4,380	3,310	3,910	1,040	1,220	1,350	310	630	6,640	920	139
23	2,290	3,150	2,710	14,400	1,040	1,160	1,410	368	575	3,390	712	152
24	1,740	2,570	2,290	7,500	1,290	1,040	1,350	475	475	2,010	602	155
25	1,410	2,150	2,500	4,670	2,360	890	1,160	1,160	452	1,290	475	132
26	1,220	1,740	6,760	3,480	2,360	1,410	1,100	740	549	1,290	452	118
27	1,040	1,740	5,850	2,860	2,150	2,640	1,100	523	409	1,040	388	107
28	920	3,150	5,190	2,430	1,880	7,500	1,100	409	348	860	329	107
29	920	2,500	25,100	2,290	1,740	6,880	980	368	310	630	368	107
30	860	2,150	25,100	2,150	....	4,470	860	3,560	256	475	368	147
31	740	....	8,030	1,950	....	3,230	....	13,100	....	388	329	....
1916-17												
1	169	142	238	2,500	6,530	6,880	2,640	1,160	292	137	1,040	658
2	142	137	218	2,010	4,770	13,400	4,280	860	575	118	800	1,160
3	132	132	214	3,910	3,150	41,700	6,180	740	712	109	770	1,040
4	116	122	221	23,500	2,570	33,200	4,090	770	712	107	1,040	1,480
5	109	118	238	36,100	2,290	24,300	5,850	920	549	102	712	920

Daily discharge, in second feet, of South Fork of Cumberland River at Nevelsville, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1916-17												
6	98	118	310	26,700	1,740	9,000	12,800	920	452	98	575	602
7	92	113	329	9,000	1,680	6,420	8,030	800	388	90	388	499
8	86	107	310	4,880	1,610	5,410	5,190	800	348	107	329	388
9	80	107	329	3,390	1,680	4,090	4,470	800	475	102	329	329
10	86	107	368	2,640	1,480	3,310	3,820	800	1,160	98	1,160	310
11	94	109	409	2,080	1,290	2,710	3,150	712	1,160	90	1,290	256
12	127	107	409	1,680	1,160	9,700	2,640	685	980	71	740	231
13	147	107	388	1,350	1,040	11,300	2,360	630	740	65	523	207
14	132	109	348	2,430	1,040	7,000	2,360	575	575	73	409	185
15	113	113	310	6,530	1,740	6,880	2,080	523	452	920	575	169
16	116	113	292	4,280	2,860	5,850	1,740	475	368	5,960	3,910	158
17	113	109	256	3,310	3,150	33,300	1,540	430	310	9,000	3,650	152
18	118	107	256	2,930	2,860	25,300	1,350	388	274	10,100	2,500	144
19	169	105	256	3,820	4,980	8,030	1,220	348	238	4,380	1,540	348
20	292	102	221	3,650	13,400	4,880	1,100	329	256	2,640	1,040	172
21	430	105	329	3,390	22,000	4,570	1,040	310	214	3,080	800	120
22	409	102	2,220	20,100	7,240	8,300	980	310	207	7,000	1,220	107
23	368	113	3,000	15,800	4,470	6,420	860	452	228	6,880	1,350	221
24	310	164	2,080	6,300	12,100	22,200	800	549	238	7,120	1,220	188
25	256	204	1,480	4,090	7,500	18,600	740	499	235	5,410	740	109
26	214	329	1,160	3,000	4,380	7,000	712	388	207	3,820	549	98
27	178	348	980	2,360	3,310	10,300	658	368	164	2,930	409	185
28	164	274	11,800	2,150	2,860	13,400	602	348	137	3,000	348	1,100
29	142	256	30,600	3,150	....	6,880	1,040	329	164	2,640	310	1,740
30	142	238	6,420	14,700	....	4,570	1,040	292	137	2,010	292	860
31	147	....	3,560	6,530	....	3,310	....	256	....	1,410	274	....
1917-18												
1	500	1,450	261	750	7,930	1,660	1,210	2,810	740	261	850	410
2	371	1,090	296	750	5,860	1,520	1,150	2,150	685	333	525	550
3	296	850	602	680	4,190	1,390	2,080	1,800	630	333	410	500
4	244	685	575	670	3,210	1,270	8,840	1,520	602	314	278	850
5	195	550	475	660	2,500	1,590	5,980	1,330	550	244	218	1,210
6	190	500	430	900	2,010	1,590	3,740	1,150	575	195	179	1,730
7	177	452	410	1,800	2,150	2,430	4,190	1,030	712	165	170	1,270
8	151	430	390	2,650	2,150	1,940	35,300	970	685	156	156	685
9	140	390	390	2,000	1,940	2,150	22,900	970	575	212	140	[illegible]
10	134	371	270	1,600	1,730	1,870	8,580	1,030	500	314	130	352
11	134	352	330	1,200	1,940	1,940	4,970	850	410	296	118	278
12	147	333	350	2,100	1,520	1,800	3,650	850	352	231	110	225
13	151	314	350	4,400	1,520	1,660	2,810	2,730	296	179	98	195
14	147	314	330	2,600	1,450	1,450	2,080	12,900	261	151	95	170
15	140	296	310	5,100	1,330	1,450	1,800	6,220	222	134	92	156
16	136	296	290	7,900	1,330	1,390	1,730	3,210	201	126	88	142
17	134	296	270	4,300	1,270	1,330	3,740	2,500	179	120	108	138
18	130	278	260	2,800	1,210	1,210	4,670	2,290	177	114	187	132
19	2,570	261	260	2,000	1,150	1,150	3,470	1,520	278	114	174	130
20	5,630	261	270	1,500	4,280	1,150	2,970	2,150	244	118	352	134
21	2,430	244	330	1,350	7,800	1,520	5,190	2,730	575	118	333	130
22	1,330	244	370	1,200	4,870	1,520	7,300	2,890	795	110	278	126
23	910	238	480	1,150	3,470	1,390	4,870	6,100	1,210	118	218	122
24	685	231	520	1,100	2,730	1,800	3,470	11,600	575	170	145	114
25	525	225	680	1,050	2,220	2,810	2,650	4,770	430	170	122	114
26	452	218	1,500	1,300	2,290	2,730	3,050	2,810	390	147	100	114
27	296	209	1,400	16,300	2,150	2,500	5,410	2,010	371	138	170	114
28	158	201	1,300	53,100	1,800	2,010	4,190	1,730	314	333	278	122
29	390	212	1,100	31,100	....	1,730	3,470	1,330	278	575	238	151
30	740	234	900	15,400	....	1,390	3,210	1,030	261	550	261	179
31	1,520	....	750	18,800	....	1,270	....	850	....	740	278	....

Daily discharge, in second feet, of South Fork of Cumberland River at Nevelsville, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1918-19												
1	167	5,740	1,660	16,500	1,330	3,050	2,290	9,100	850	244	81	106
2	142	2,970	1,330	64,900	1,210	2,500	1,870	6,820	712	212	108	114
3	130	1,870	1,090	22,200	1,150	2,010	1,590	4,190	575	174	130	126
4	120	1,450	970	11,400	1,090	1,800	1,390	2,970	500	160	158	110
5	114	1,150	850	5,980	1,090	1,940	1,330	2,220	430	151	278	95
6	104	970	740	3,560	1,030	19,300	1,270	1,940	371	162	500	82
7	95	740	630	2,970	910	8,580	1,150	1,800	371	147	314	79
8	88	658	602	2,730	910	5,410	1,030	1,800	352	167	261	79
9	82	575	575	2,500	910	8,710	970	2,970	430	261	160	76
10	79	525	550	2,430	850	8,710	970	3,560	452	278	120	85
11	76	475	740	2,080	850	5,300	1,090	2,290	550	278	110	71
12	79	452	768	1,940	795	3,650	2,890	1,800	630	261	218	66
13	82	410	685	1,730	850	2,810	2,650	1,520	740	198	352	58
14	85	390	1,330	1,660	970	2,360	2,010	1,270	1,520	172	222	61
15	82	352	2,650	1,800	1,270	2,430	1,660	1,210	910	149	187	58
16	88	333	4,010	1,940	1,450	2,220	2,430	1,090	630	142	165	56
17	85	740	2,650	2,010	1,330	4,670	5,740	1,270	452	126	151	54
18	134	4,770	2,010	4,870	1,270	14,700	4,190	1,030	352	118	156	52
19	970	4,370	1,520	8,580	1,210	7,060	2,730	970	314	130	142	50
20	1,800	2,970	1,270	5,980	1,210	5,080	2,080	1,210	390	170	134	52
21	3,470	2,220	1,210	3,850	1,590	3,210	1,730	2,360	296	147	122	57
22	1,940	1,800	1,940	2,730	2,430	2,290	1,450	2,500	261	138	112	206
23	1,150	1,330	6,340	3,050	9,750	1,870	1,520	1,940	228	128	106	206
24	740	1,210	4,370	8,840	5,300	1,730	1,450	1,660	371	122	112	170
25	1,030	1,030	3,380	6,940	4,670	1,520	1,150	2,010	712	106	114	130
26	1,390	970	2,650	4,190	4,970	1,390	970	2,150	712	85	102	118
27	1,210	850	2,150	3,210	4,470	2,220	970	2,360	550	82	90	88
28	1,150	850	1,730	2,570	3,560	12,400	850	2,220	475	82	95	82
29	1,330	1,090	1,520	2,080	....	5,520	1,090	1,730	390	79	92	76
30	3,830	2,360	1,390	1,730	....	3,740	2,890	1,270	296	76	88	79
31	14,200	....	1,210	1,450	....	2,810	....	1,030	....	69	95	....
1919-20												
1	71	13,200	6,940	1,090	1,660	2,150	4,770	2,970	630	352	116	740
2	66	21,600	3,740	1,030	1,450	2,150	35,300	2,890	575	314	108	1,210
3	63	7,300	2,650	850	1,330	2,010	24,300	4,370	768	278	100	850
4	63	3,380	2,080	740	13,600	1,800	9,100	4,010	4,280	352	90	712
5	95	2,500	1,660	630	22,200	2,810	7,180	3,130	9,890	314	96	525
6	296	1,870	1,730	602	8,840	3,470	5,300	2,500	8,450	296	92	500
7	452	1,390	5,300	712	4,970	2,890	4,010	2,220	3,050	278	158	500
8	314	1,210	12,800	1,520	3,740	2,730	3,470	2,080	2,220	278	149	475
9	204	1,030	6,460	6,220	2,810	2,290	2,890	1,940	1,450	261	244	475
10	170	910	8,710	6,580	2,570	2,150	2,500	1,520	1,150	244	3,[illegible]40	550
11	147	1,450	6,580	4,280	2,430	1,940	2,150	1,330	910	244	3,470	575
12	2,970	3,470	4,280	2,890	2,150	16,800	1,870	1,210	740	261	4,670	1,270
13	3,290	3,830	6,100	2,360	2,010	40,700	1,800	1,090	602	192	7,540	8,450
14	2,220	2,970	20,800	1,940	1,870	9,750	1,660	970	525	174	7,670	3,650
15	2,890	1,940	11,500	1,660	1,730	5,630	1,390	850	430	172	6,700	5,860
16	11,400	1,660	5,740	1,870	1,450	4,100	1,270	740	371	190	10,900	4,770
17	9,100	1,210	3,650	2,430	1,270	4,370	1,270	685	314	222	5,860	3,130
18	4,190	1,030	3,050	2,500	1,450	4,570	1,940	685	278	234	5,980	1,870
19	2,810	910	2,430	2,220	1,520	14,100	2,080	685	261	278	3,210	1,390
20	1,730	768	2,150	2,010	1,450	16,300	2,890	685	768	1,330	2,220	1,090
21	1,090	658	1,940	10,300	1,450	7,540	5,860	740	11,800	850	1,030	850
22	1,090	602	1,590	31,500	24,700	4,100	5,410	850	5,080	525	712	685
23	1,940	550	1,450	39,700	21,600	3,050	3,290	910	2,810	371	3,210	575
24	10,900	525	1,330	33,100	12,000	2,500	2,500	795	1,730	296	2,080	500

Daily discharge, in second feet, of South Fork of Cumberland river at Nevelsville, Ky., for the years ending September 30, 1915-1920.—Continued.

Day	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
1919-20												
25	6,700	575	1,210	19,500	7,300	2,150	2,080	2,730	1,150	231	1,390	475
26	3,470	7,670	1,090	8,710	4,770	2,010	5,300	3,210	850	204	1,090	525
27	2,080	11,600	1,030	4,870	3,130	1,870	6,100	2,010	602	170	1,090	500
28	1,800	6,580	970	3,650	2,500	1,660	4,100	1,330	525	147	1,090	795
29	1,390	4,470	910	2,730	2,290	2,010	3,050	1,090	525	136	740	850
30	1,210	6,820	850	2,290	....	1,590	2,570	850	390	128	500	550
31	1,090	....	768	1,940	....	1,390	....	740	....	126	1,030	....

Monthly discharge of South Fork of Cumberland River at Nevelsville, Ky., for years ending September 30, 1915-1920.

(Drainage area, 1,260 square miles.)

Month	Discharge in Second-feet				Run-off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1915					
March 10-31	5,410	920	2,190	1.74	1.42
April	1,680	452	919	.729	.81
May	5,080	256	1,340	1.06	1.22
June	8,860	499	2,160	1.71	1.91
July	17,200	329	2,790	2.21	2.55
August	11,800	256	2,160	1.71	1.97
September	4,880	256	1,140	.905	1.01
1915-16					
October	17,900	549	3,340	2.65	3.06
November	57,000	409	5,680	4.51	5.03
December	43,000	800	6,380	5.06	5.83
January	27,500	1,950	7,170	5.69	6.56
February	5,960	1,040	2,430	1.93	2.08
March	7,500	980	2,720	2.16	2.49
April	5,190	860	1,850	1.47	1.64
May	13,100	310	1,120	.889	1.02
June	5,960	256	1,450	1.15	1.28
July	6,640	127	1,390	1.10	1.27
August	4,880	329	1,520	1.21	1.40
September	452	107	212	.168	.19
The year	57,000	107	2,950	2.34	31.85
1916-17					
October	430	80	171	0.136	0.16
November	348	102	147	.117	.13
December	30,600	214	2,240	1.78	2.05
January	36,100	1,350	7,360	5.84	6.73
February	22,000	1,040	4,460	3.54	3.69
March	41,700	2,710	11,900	9.44	10.88
April	12,800	602	2,850	2.26	2.52
May	1,160	256	273	.455	.52
June	1,160	137	432	.343	.38
July	10,100	65	2,570	2.04	2.35
August	3,910	274	995	.790	.91
September	1,740	98	471	.374	.42
The year	41,700	65	2,850	2.26	30.74

Monthly discharge of South Fork of Cumberland River at Nevelsville, Ky., for years ending September 30, 1915-1920.—Continued.

Month	Discharge in Second-feet				Run-off (depth in inches on drainage area).
	Maximum	Minimum	Mean.	Per Square Mile	
1917-18					
October	5,630	130	682	0.541	0.62
November	1,450	201	401	.318	.35
December	1,500	260	532	.422	.49
January	53,100	660	6,070	4.82	5.56
February	7,930	1,150	2,790	2.21	2.30
March	2,810	1,150	1,700	1.35	1.56
April	35,300	1,150	5,620	4.46	4.98
May	12,900	850	2,830	2.25	2.59
June	1,210	177	469	.372	.42
July	740	114	235	.187	.22
August	850	88	223	.177	.20
September	1,730	114	368	.292	.33
The year	53,100	88	1,820	1.44	19.62
1918-19					
October	14,200	76	1,160	0.921	1.06
November	5,740	333	1,520	1.21	1.35
December	6,340	550	1,760	1.40	1.61
January	64,900	1,450	6,690	5.31	6.12
February	9,750	795	2,090	1.66	1.73
March	19,300	1,390	4,870	3.87	4.46
April	5,740	850	1,850	1.47	1.64
May	9,100	970	2,330	1.85	2.13
June	1,520	228	527	.418	.47
July	278	69	155	.123	.14
August	500	81	164	.130	.15
September	206	50	91.4	.073	.08
The year	64,900	50	1,940	1.54	20.94
1919-20					
October	11,400	63	2,430	1.93	2.22
November	21,600	525	3,790	3.01	3.36
December	20,800	768	4,240	3.37	3.88
January	39,700	602	6,530	5.18	5.97
February	24,700	1,270	5,530	4.39	4.74
March	40,700	1,390	5,570	4.42	5.10
April	35,300	1,270	5,250	4.17	4.65
May	4,370	685	1,670	1.33	1.53
June	11,800	261	2,100	1.67	1.86
July	1,330	126	305	.242	.28
August	10,900	90	2,490	1.98	2.28
September	8,450	475	1,500	1.19	1.33
The year	40,700	63	3,440	2.73	37.20

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